Vol. 1019 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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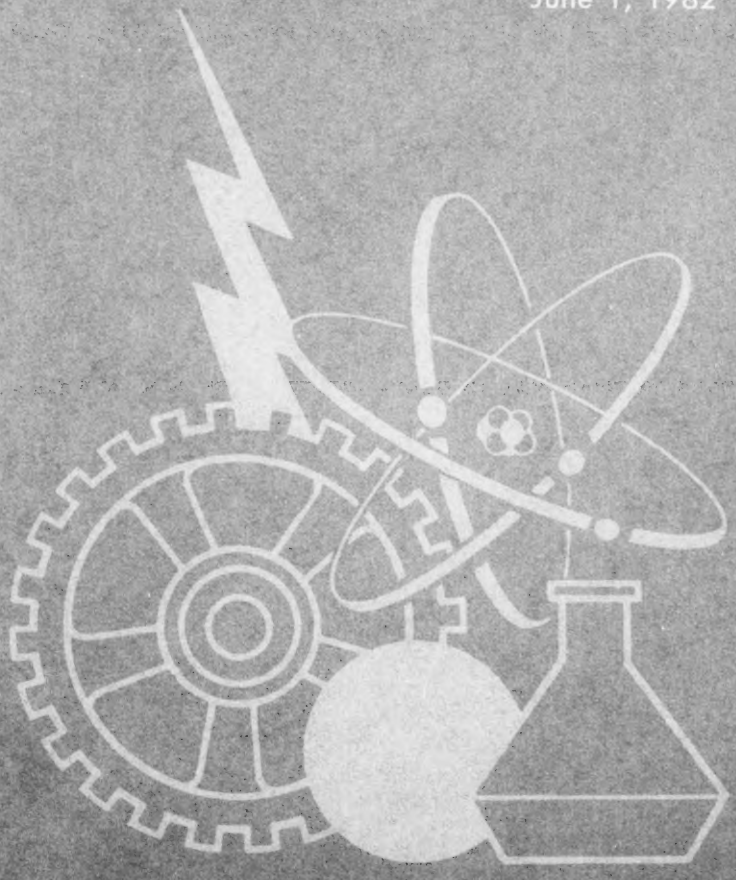
June 1, 1982



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

June 1, 1982 Volume 1019 Number 1

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1019 OG 2
Board of Appeals Decisions Rendered	1019 OG 2
Reissue Applications Filed	1018 OG 2
Requests for Reexamination Filed	1019 OG 2
Examiner Education Program	1019 OG 2
Notice of Availability for Licensing	1019 OG 3
Trademark Suits	1019 OG 3
Patent Certificates of Correction	1019 OG 6
Disclaimer	1019 OG 6
Dedication	1019 OG 6
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1019 OG 7
Condition of Patent Applications	1019 OG 8
Reexaminations	1019 OG 9
Defensive Patent Publication (101,901)	1
Reissue Patents Granted (30,950)	3
Plant Patents Granted (4,853)	7
Patents Granted	
General and Mechanical (4,332,033)	9
Chemical (4,332,584)	193
Electrical (4,332,973)	297
Design Patents Granted (264,640)	369
Index of Patentees	PI 1
Indices of Reissue, Reexaminations, Design and Plant Patentees	PI 41
Index of Applicants of Defensive Publications	PI 44
Classification of	
Patents (Including Reissues and Reexaminations)	PI 45
Designs, Plants and Defensive Publications	PI 47
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 48
Designs, Plants and Applicants of Defensive Publications	PI 49
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Apr. 1982

Affirmed	166
Affirmed in Part	22
Reversed	80
Total	268

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,188,177, Re. S.N. 354,015, Filed Mar. 2, 1982, Cl. 425/005, SYSTEM FOR FABRICATION OF SEMICONDUCTOR BODIES, Jack S. Kilby, Owner of Record: *Texas Instruments, Inc., Dallas, Tex.,* Attorney or Agent: D. Carl Richards, et al., Ex. Gp.: 147

4,304,578, Re. S.N. 351,945, Filed Feb. 24, 1982, Cl. 55/189, WATER SEPARATOR FOR A GAS ANALYZER, Matti A. Hakala, et al., Owner of Record: *Instucmentarium Oy, Helsinki, Finland,* Attorney or Agent: Elwin A. Andrus, et al., Ex. Gp.: 176

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,982,419, Reexam. No. 90/000,193, Requested: Apr. 28, 1982, Cl. 73/13G, APPARATUS FOR AND METHOD OF DETERMINING ROTATIONAL AND LINEAR STIFFNESS, John T. Boys, Owner of Record: *Requester,* Attorney or Agent: Aaron Nerenberg, Ex. Gp.: 240, Requester: SPS Technologies, Inc., Jenkintown, Pa.

4,073,296, Reexam. No. 90/000,195, Requested: May 4, 1982, Cl. 128/329, APPARATUS FOR ACUPRESSURE TREATMENT, Francis J. McCall, Owner of Record: *Inventor,* Attorney or Agent: Alter & Weiss, Ex. Gp.: 330, Requester: Acu-Thin Weight Control, Inc., Pampano, Fla.

4,082,484, Reexam. No. 90/000,194, Requested: Apr. 30, 1982, Cl. 418/55, SCROLL-TYPE APPARATUS WITH FIXED THROW CRANK DRIVE MECHANISM, John E. McCullough, Owner of Record: *Arthur D. Little, Inc., Cambridge, Mass.,* Attorney or Agent: Bessie A. Lepper, Ex. Gp.: 343, Requester: Martin P. Hoffman, Arlington, Va.

4,294,764, Reexam. No. 90/000,191, Requested: Apr. 21, 1982, Cl. 260/340.909, N-(OPTIONALLY SUBSTITUTED 1,3 DIOXOLAN OR DIOXAN-2-YLMETHYL)-N-ALKYL, ALKENYL, OR ALKNYL 1-2,2-DICHLOROACETAMIDES, Jay K. Rinehart, Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.,* Attorney or Agent: Edward J. Whitfield, Ex. Gp.: 120, Requester: Stauffer Chemical Co., Westport, Conn.

Examiner Education Program

The U.S. Patent and Trademark Office and Intellectual Property Owners, Inc. are jointly instituting an education program for patent examiners to increase their awareness of industrial technology, particularly in rapidly advancing industrial fields. The program is expected to benefit the patent system and its users by improving the quality of patent examining, resulting, in turn, in the issuance of higher quality patents.

Under the joint program, costing about $350,000 annually, each patent examiner will be given an opportunity to spend up to a week once every three years in visiting commercial and industrial installations which industry makes available for this purpose. The cost of the program will be defrayed by contributions from industry. However, to avoid even the slightest possibility that contributors might influence Patent and Trademark Office decisions in specific applications, the contributors' identities will be kept from patent examiners who visit commercial or industrial facilities, and those who designate examiners for specific trips.

Business concerns interested in making a financial contribution in support of this program should mail contributions to the address below:

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Intellectual Property Owners, Inc. is a non-profit organization dedicated to improving the public awareness of the basic social and economic values of a strong system of patents, trademarks, copyrights and trade secrets.

GERALD J. MOSSINGHOFF,
Apr. 27, 1982. *Commissioner of Patents and Trademarks.*

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
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Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-140,063. N-SULFONYL AMINE-MEDIATED SULFAMATION OF AMINES. Filed Apr. 19, 1980 by Dept. of HHS. Inventor: *Grant E. Dubois.*

SN 6-140,064. SULFAMO DIHYDROCHALCONE SWEETNERS. Filed Apr. 14, 1980 by Dept. of HHS. Inventor: *Grant E. Dubois.*

SN 6-148,491. APPARATUS AND METHOD FOR CONTINUOUS COUNTERCURRENT EXTRACTION AND PARTICLE SEPARATION. Filed May 9, 1980 by Dept. of HHS. Patent 4,324,661 issued Apr. 13, 1982. Inventor: *Dr. Yoichiro Ito.*

SN 6-330,020. SELF-CONTAINED LYSIS-FILTRATION BLOOD CULTURE CHAMBER. Filed Dec. 11, 1981 by Dept. of HHS. Inventor: *Dr. Charles H. Zierdt.*

SN 6-349,313. MODIFIED SILVER STAIN FOR PROTEINS IN POLYACRYLAMIDE GELS. Filed Feb. 16, 1982 by Dept. of HHS. Inventor: *James H. Morrissey.*

SN 6-363,480. NEISSERIA GONORRHOEAE VACCINE. Filed Mar. 30, 1982 by Dept. of HHS. Inventor: *Buchanan, et al.*

Trademark Suits

Notices under 15 U.S.C. 1116;
Trademark Act of July 5, 1946.

Reg. No. **85,423** (KODAK), Eastman Kodak Co.; Reg. No. **928,095** (KODAK AND DESIGN), **same, filed** Feb. 9, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-0586, *Eastman Kodak Co.* v. *Alfred J. Krahetz, et al.*

Reg. No. **223,725** (SIMULATED OILCLOTH LABEL), Levi Strauss & Co.; Reg. No. **404,248** (ARCUATE DESIGN), **same;** Reg. No. **849,437** (LEVI'S AND DESIGN), **same;** Reg. No. **989,435** (ARCUATE DESIGN), **same;** Reg. No. **1,139,254** (ARCUATE AND DESIGN), **same, filed** Apr. 2, 1982, D.C., M.D.N.C. (Greensboro), Doc. C-82-376-G, *Blue Bell, Inc.* v. *Levi Strauss & Co.*

Reg. No. **236,079** (MAXIMENT), Set Products, Inc.; Reg. No. **854,955** (MAXIRON), **same, filed** Sept. 10, 1981, D.C., N.D. Tex. (Dallas), Doc. CA3-81-1652-H, *Set Products, Inc.* v. *Surface Bonding Systems, Inc., et al.* Notice of Dismissal without prejudice filed Mar. 10, 1982.

Reg. No. **297,594** ("VL" AND DESIGN), Louis Vuitton S.A., **filed** Feb. 5, 1982, D.C. Md. (Baltimore), Doc. H-82-291, *Louis Vuitton S.A.* v. *Sun J. Kim, t/a Best Handbag Co.* **Same, filed** July 21, 1981, D.C., S.D.N.Y., Doc. 81-Civ-4516, *Louis Vuitton* v. *Stephen Clark.* Defendants are permanently enjoined from further infringing Plaintiff's trademark. Filed Apr. 1, 1982.

Reg. No. 404,248. (See Reg. No. 223,725.)

Reg. No. **410,701** (CARTIER), Cartier, Inc.; Reg. No. **411,239, same;** Reg. No. **411,240, same;** Reg. No. **411,975, same;** Reg. No. **414,433, same;** Reg. No. **414,434, same;** Reg. No. **752,301, same;** Reg. No. **759,201, same, filed** Feb. 9, 1982, D.C., S.D.N.Y., Doc. 82-Civ-0826 KTD, *Cartier, Inc., et al.* v. *Cartier Packaging, Inc.* Defendant is permanently enjoined and restrained from further infringing Plaintiff's trademarks. Filed Mar. 22, 1982.

Reg. No. **411,239** (CARTIER), Cartier, Inc.; Reg. No. **411,240, same;** Reg. No. **411,975, same;** Reg. No. **759,201, same, filed** Apr. 10, 1981, D.C., N.D. Ga. (Atlanta), Doc. C81-654A, *Cartier, Inc., et al.* v. *Richard Haggart.* Defendant is enjoined and restrained from further infringing Plaintiff's trademarks. Filed Feb. 9, 1982.

Reg. No. **411,239** (CARTIER), Cartier, Inc.; Reg. No. **411,240, same;** Reg. No. **411,975, same;** Reg. No. **759,201, same;** Reg. No. **925,672** (C DESIGN), **same, filed** Feb. 18, 1982, D.C., N.D. Tex. (Dallas), Doc. CA3-82-0254G, *Cartier, Inc., et al.* v. *Bunny Thompson, et al.*

Reg. No. **411,239** (CARTIER), Cartier, Inc.; Reg. No. **411,240, same;** Reg. No. **411,975, same;** Reg. No. **414,604, same;** Reg. No. **758,858, same;** Reg. No. **759,201, same;** Reg. No. **897,507, same;** Reg. No. **897,537, same;** Reg. No. **925,672** (C DESIGN), **same;** Reg. No. **1,071,823** (INTERLOCKING C DESIGN), **same, filed** Mar. 12, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-1249 RMT, *Cartier, Inc., et al.* v. *Sheila & Robin Creations.*

Reg. No. 411,239. (See Reg. No. 410,701.)

Reg. No. 411,240. (See Reg. Nos. 410,701 and 411,239.)

Reg. No. **411,975** (CARTIER), Cartier, Inc.; Reg. No. **759,201, same;** Reg. No. **925,672** (C DESIGN), **same;** Reg. No. **1,071,823** (INTERLOCKING C DESIGN), **same, filed** Feb. 22, 1982, D.C., N.D. Ga. (Atlanta), Doc. C82-341A, *Cartier, Inc., et al.* v. *Bags 'N' Things, Inc.*

Reg. No. **411,975** (CARTIER), Cartier, Inc.; Reg. No. **759,201, same;** Reg. No. **925,672** (C DESIGN), **same, filed** Dec. 18, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7893 KTD, *Cartier, Inc., et al.* v. *Jose Varcarcel.* Defendant is permanently enjoined and restrained from further infringing Plaintiff's trademarks. Filed Feb. 24, 1982.

Reg. No. 411,975. (See Reg. Nos. 410,701 and 411,239.)

Reg. No. 414,433. (See Reg. No. 410,701.)

Reg. No. 414,434. (See Reg. No. 410,701.)

Reg. No. 414,604. (See Reg. No. 411,239.)

Reg. No. **530,111** (SHOP SMITH), Shopsmith, Inc., **filed** Feb. 3, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-0492-R, *Shopsmith, Inc.* v. *Tool Stores, Inc.*

Reg. No. **538,298** (LOVE), Joseph Love, Inc.; Reg. No. **765,981** (LOVELAND AND DESIGN), **same;** Reg. No. **765,982** (IT MUST BE LOVE AND DESIGN), **same;** Reg. No. **767,630** (LOVE), **same;** Reg. No. **929,198** (LOVE AND DESIGN), **same;** Reg. No. **1,129,316** (LOVELAND), **same;** Reg. No. **1,130,488** (TRUE LOVE), **same;** Reg. No. **1,157,421** (LOVERALLS), **same, filed** Feb. 16, 1982, D.C., S.D.N.Y., Doc. 82-Civ-0927, *Joseph Love, Inc.* v. *Recycled Paper Products, Inc.*

Reg. No. **544,380** (GAME-TIME), Game Time, Inc.; Reg. No. **979,743** (GAME TIME), **same, filed** Feb. 19, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 1018, *Game Time, Inc.* v. *General Consumer Electronics Corp.*

Reg. No. **585,718** (IMPERIAL SLACKS AND DESIGN), Haggar Co., **filed** Feb. 11, 1982, D.C., S.D.N.Y., Doc. 82-Civ-0895, *Haggar Co.* v. *Slaks Fifth Ave., Inc., et al.*

Reg. No. **616,873** (THE DOW JONES AVERAGES), Dow Jones & Co., Inc., **filed** Mar. 31, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2023, *Dow Jones & Co., Inc.* v. *Board of Trade of the City of Chicago.*

Reg. No. **695,545** (NUTRIPET), Nutrilite Products, Inc., **filed** Mar. 26, 1982, D.C., N.D. Ga. (Atlanta), Doc. C82-638A, *Nutrilite Products, Inc.* v. *Nutri-Pet, Inc.*

Reg. No. **701,253** (SER-AP-ES), Ciba-Geigy Corp., **filed** Mar. 4, 1982, D.C.N.J. (Newark), Doc. 87-671, *Ciba-Geigy Corp.* v. *Zenith Laboratories, Inc., et al.*

Reg. No. **709,460** (FOUR WINDS), Four Winds Travel, Inc., **filed** Mar. 30, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1992 CLB, *Four Winds Travel (A N.Y. Corp.)* v. *Four Winds Travel (A Mo. Corp.).*

Reg. No. **743,572** (McDONALD'S), McDonald's Corp.; Reg. No. **804,365, same;** Reg. No. **1,113,227, same;** Reg. No. **1,114,138, same;** Reg. No. **1,155,956** (NOBODY CAN DO IT LIKE McDONALD'S CAN), **same;** Reg. No. **1,155,957** (NOBODY CAN DO IT LIKE McDONALD'S), **same, filed** Sept. 3, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 5020, *McDonald's Corp.* v. *AMP Records, et al.*

Reg. No. **749,501** (REMY MARTIN), E. Remy Martin & Co., S.A.; Reg. No. **1,052,023** (ST. REMY), **same;** Reg. No. **1,181,432** (REMY AND DESIGN), **same, filed** Feb. 24, 1982, D.C.N.J. (Newark), Doc. 82-541, *E. Remy Martin & Co., S.A.* v. *Hoffman Import & Distributing Co.*

Reg. No. 752,301. (See Reg. No. 410,701.)

Reg. No. 758,858. (See Reg. No. 411,239.)

Reg. No. 759,201. (See Reg. Nos. 410,701, 411,239 and 411,975.)

Reg. No. 765,981. (See Reg. No. 538,298.)

Reg. No. 765,982. (See Reg. No. 538,298.)

Reg. No. 767,630. (See Reg. No. 538,298.)

Reg. No. **781,522** (KOA AND EMBLEM), Kampgrounds of America, Inc.; Reg. No. **933,590** (KOA AND DESIGN), **same;** Reg. No. **934,757** (KOA AND DESIGN), **same;** Reg. No. **936,413** (KOA AND DESIGN), **same;** Reg. No. **940,884** (KOA AND DESIGN), **same;** Reg. No. **941,046** (KOA AND DESIGN), **same;** Reg. No. **943,643** (KOA AND DESIGN), **same;** Reg. No. **1,003,508** (KOA), **same, filed** Sept. 25, 1980, D.C. Nev. (Reno), Doc. CV-R-80-217-ECR, *Kampgrounds of America, Inc.* v. *Morris Gallagher, et al.* Permanent injunction entered in favor of plaintiff against the defendants, enjoining them from use or false designation of any of Plaintiff's registered trademarks and servicemarks. Filed Feb. 11, 1982.

Reg. No. **782,130** (JACK WINTER), Jack Winter Apparel, Inc.; Reg. No. **1,012,607** (WENDY WINTER), **same, filed** Nov. 20, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7847, *Jack Winter Apparel, Inc.* v. *Yesterday's News, Inc.*

Reg. No. **783,232** (CHROMATIC), Chromatic Corp., **filed** June 11, 1981, D.C., S.D.N.Y., Doc. 81-Civ-3645 CBM, *Chromatic Corp.* v. *Erwin Pearl.* Action discontinued with leave to reopen in 30 days if settlement is not concluded. Filed Mar. 1, 1982.

Reg. No. 804,365. (See Reg. No. 743,572.)

Reg. No. **823,663** (DELACORTE PRESS), Dell Publishing Co., Inc., **filed** Nov. 24, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7350 JMC, *Dell Publishing Co., Inc.* v. *DellaCorte Publications, Inc.* Plaintiff is the owner of Reg. No. 823,663. Defendants will discontinue the use of the names "DellaCorte Publications, Inc.", "DellaCorte, Inc." or "DellaCorte" as a trademark, trade name, service mark or trade style throughout the world. Filed Mar. 22, 1982.

Reg. No. 849,437. (See Reg. No. 223,725.)

Reg. No. 854,955. (See Reg. No. 236,079.)

Reg. No. **873,775** (PROXABRUSH), John O. Butler Co.; Reg. No. **1,191,119, same, filed** July 17, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 4064, *John O. Butler Co.* v. *Block Drug Co., Inc.*

Reg. No. **879,410** (BATTERIES UNLIMITED AND DESIGN), Batteries Unlimited, Inc.; Reg. No. **954,943** (BATTERIES UNLIMITED), **same, filed** Oct. 26, 1981, D.C., E.D. Mo. (St. Louis), Doc. 81-1344C(2), *Batteries Unlimited, Inc.* v. *Batteries Unlimited, Inc.* Defendants are perpetually enjoined and restrained from using the term "BATTERIES UNLIMITED" or any mark or term similar thereto in connection with any business, including but not limited to the distribution or sale of storage batteries and related products. Filed Feb. 18, 1982.

Reg. No. 897,507. (See Reg. No. 411,239.)

Reg. No. 897,537. (See Reg. No. 411,239.)

Reg. No. 925,672. (See Reg. Nos. 411,239 and 411,975.)

Reg. No. 928,095. (See Reg. No. 85,423.)

Reg. No. 929,198. (See Reg. No. 538,298.)

Reg. No. 933,590. (See Reg. No. 781,522.)

Reg. No. 934,757. (See Reg. No. 781,522.)

Reg. No. 936,413. (See Reg. No. 781,522.)

Reg. No. 940,884. (See Reg. No. 781,522.)

Reg. No. 941,046. (See Reg. No. 781,522.)

Reg. No. 943,643. (See Reg. No. 781,522.)

Reg. No. 954,943. (See Reg. No. 879,410.)

Reg. No. **977,437** (GAYELORD HAUSER AND DESIGN), Modern Products, Inc., **filed** Oct. 19, 1981, D.C., N.D. Ind. (South Bend), Doc. S81-360, *Modern Products, Inc., et al.* v. *Beautymasters, Inc., et al.* Defendants are permanently enjoined from printing, publishing, or permitting to be published on their behalf, any material containing all or any part of the name GAYELORD HAUSER. Filed Mar. 10, 1982.

Reg. No. 979,743. (See Reg. No. 544,380.)

Reg. No. 989,435. (See Reg. No. 223,725.)

Reg. No. 1,003,508. (See Reg. No. 781,522.)

Reg. No. 1,012,607. (See Reg. No. 782,130.)

Reg. No. **1,020,660** (DESIGN MISCELLANEOUS), Golden Harvest Seeds, Inc., **filed** Jan. 22, 1982, D.C. Neb. (Omaha), Doc. 82-0-24, *Golden Harvest Seeds, Inc.* v. *Stauffer Chemical Co., et al.*

Reg. No. **1,037,231** (PERMATHENE-12), Alleghany Pharmacal Corp., **filed** Sept. 10, 1980, D.C., S.D.N.Y., Doc. 80-Civ-5142 RJW, *Alleghany Pharmacal Corp.* v. *Lee Pharmaceuticals.* Action dismissed with prejudice and without costs or attorneys' fee on Oct. 23, 1980.

Reg. No. 1,052,023. (See Reg. No. 749,501.)

Reg. No. **1,059,349** (BON JOUR), Bonjour Paris Fashions, Inc. **filed** Feb. 17, 1982, D.C., S.D.N.Y., Doc. 82-Civ-0954, *Bon Jour International Ltd.* v. *Ahead By A Length, Inc., et al.*

Reg. No. **1,068,167** (J. G. HOOK AND DESIGN), J. G. Hook, Inc., **filed** Mar. 29, 1982, D.C., E.D. Pa.

(Philadelphia), Doc. 82-1418, *J. G. Hook, Inc.* v. *Hartog of California, Inc.*

Reg. No. 1,071,823. (See Reg. Nos. 411,239 and 411,975.)

Reg. No. **1,086,041** (CALVIN KLEIN), Calvin Klein Co., **filed** Nov. 30, 1981, D.C., S.D. Fla. (Miami), Doc. 81-2676-CIV-EPS, *Calvin Klein Co., et al.* v. *Gee Zee Industries, Inc., et al.* **Same, filed** Mar. 10, 1982, D.C., M.D. Fla. (Tampa), Doc. 82-0230 CIV T H, *Calvin Klein Co., et al.* v. *J. C. Griffin Corp., et al.* **Same, filed** Dec. 11, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7714-JMC, *Calvin Klein Co., et ano.* v. *Gotham Tops, Co. etc., et ano.* Plantiffs are the owner and exclusive licensee of the trademark CALVIN KLEIN. Said trademark is valid and subsisting. Defendants are permanently enjoined from selling, buying, holding, etc. the trademark CALVIN KLEIN or other symbol or designation confusingly similar thereto. Filed Mar. 16, 1982. **Same, filed** Mar. 24, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1857, *Calvin Klein Co., Inc.* v. *Calvin Line Co.*

Reg. No. **1,102,347** (SHARKHEAD AND SWIMMER DESIGN), Universal City Studios, Inc.; Reg. No. **1,103,605** (JAWS, SHARKHEAD, AND SWIMMER DESIGN), **same, filed** Mar. 1, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-1033 KN (K), *Universal City Studios, Inc., et al.* v. *Film Ventures International, Inc., et al.*

Reg. No. 1,103,605. (See Reg. No. 1,102,347.)

Reg. No. **1,105,850** (DESIGN MISCELLANEOUS), Binney & Smith, Inc., **filed** Mar. 22, 1982, D.C., N.D. Tex. (Dallas), Doc. CA3-82-0434R, *Binney & Smith, Inc.* v. *Alfred W. Zlogar, et al.*

Reg. No. 1,113,227. (See Reg. No. 743,572.)

Reg. No. 1,114,138. (See Reg. No. 743,572.)

Reg. No. **1,121,659** (PLURAL COMPONENT SYSTEMS), Plural Component Systems, **filed** May 17, 1977, D.C., S.D. Fla. (Fort Lauderdale), Doc. 77-6216-Civ-NCR, *Plural Component Systems* v. *Plural Component Systems, Inc., et al.* Verdict that Defendants have exclusive right to use of the name Plural Component System in the State of Florida filed Feb. 1, 1980.

Reg. No. **1,122,403** (VENT), Corona Hair Net Corp., **filed** Mar. 8, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1141 WMB, *Corona Hair Net Corp.* v. *Devon, et al.*

Reg. No. **1,124,979** (CO-JACK), Farmer's Pride Cheese, Inc., **filed** Dec. 29, 1981, D.C., W.D. Wis. (Madison), Doc. 81-C-1010, *Farmer's Pride Cheese, Inc.* v. *Francis Green Heck, doing business as Nelson Cheese Co.*

Reg. No. **1,126,621** (DESIGN OF A FIST WITH RAISED GREEN THUMB), Lawn Doctor, Inc., **filed** Mar. 1, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-0911, *Lawn Doctor, Inc.* v. *Neal Katz, et al.*

Reg. No. **1,126,773** (TRI-STATE AND DESIGN), Tri-State Breeders Cooperative, **filed** Feb. 10, 1982, D.C., W.D. Wis. (Madison), Doc. 82-C-90, *Tri-State Breeders Cooperative* v. *Tri-State de Costa Rica, S.A.*

Reg. No. 1,129,316. (See Reg. No. 538,298.)

Reg. No. 1,130,488. (See Reg. No. 538,298.)

Reg. No. **1,137,810** (KERO-SUN, INC. AND DESIGN), Kero-Sun, Inc.; Reg. No. **1,176,027** (KERO-SUN), **same, filed** Feb. 19, 1982, D.C., W.D. Pa. (Pittsburgh), Doc. 82-271, *Kero-Sun, Inc.* v. *Robert J. Tutoki, et al.*

Reg. No. 1,139,254. (See Reg. No. 223,725.)

Reg. No. **1,149,522** (WATER SEAL), E. A. Thompson Co., Inc., **filed** Feb. 19, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 0821R, *E. A. Thompson Co., Inc.* v. *Jasco Chemical Corp.* **Same, filed** Mar. 19, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1368, *Jasco Chemical Corp.* v. *E. A. Thompson Co., Inc.*

Reg. No. 1,155,956. (See Reg. No. 743,572.)

Reg. No. 1,155,957. (See Reg. No. 743,572.)

Reg. No. 1,157,421. (See Reg. No. 538,298.)

Reg. No. **1,159,134** (SILHOUETTE), Gulf & Western Corp.; Reg. No. **1,170,161** (SILHOUETTE ROMANCE AND DESIGN), **same, filed** Mar. 26, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1910, *Gulf & Western Corp.* v. *Sharon Publications, Inc., et al.*

Reg. No. **1,162,524** (VIDEOLA), Magnasync/Moviola Corp., **filed** Oct. 5, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 5198 WMB, *Magnasync/Moviola Corp.* v. *Sony Corp. of America.* Stipulation of Dismissal of action filed Mar. 19, 1982.

Reg. No. 1,170,161. (See Reg. No. 1,159,134.)

Reg. No. 1,176,027. (See Reg. No. 1,137,810.)

Reg. No. **1,181,061** (RUNNER'S WORLD), World Publications, Inc., **filed** Jan. 9, 1979, D.C., S.D.N.Y., Doc. 79-Civ-0112, *World Publications, Inc.* v. *Runner World, Inc., et al.* Stipulation and Order of Dismissal filed Sept. 10, 1979.

Reg. No. 1,181,432. (See Reg. No. 749,501.)

Reg. No. **1,181,441** (PRISM), Deltacom, Inc., **filed** Mar. 13, 1981, D.C., S.D.N.Y., Doc. 82-Civ-1529, *Deltacom, Inc.* v. *Synergetics Corp., et al.*

Reg. No. **1,183,634** (WOODCHIEF AND DESIGN), Suburban Mfg. Co., **filed** Dec. 2, 1980, D.C., E.D. Tenn. (Chattanooga), Doc. 1-80-412, *Suburban Mfg. Co.* v. *Hevac Mfg. Ltd., et al.*

Reg. No. **1,186,017** (CHICKEN GEORGE AND DESIGN), Joloj Industries, Inc., **filed** May 13, 1981, D.C., E.D. Pa. (Philadelphia), Doc. 81-2013, *Joloj Industries, Inc., et al.* v. *Marvin Gordon, et al.*

Reg. No. **1,188,641** (WINDOW QUILT), Appropriate Technology Corp., **filed** Mar. 29, 1982, D.C. Conn. (Hartford), Doc. H-82-323, *Appropriate Technology Corp.* v. *Energy Savings Marketplace, Inc., et al.*

Reg. No. 1,191,119. (See Reg. No. 873,775.)

PATENT NOTICES

Certificates of Correction for the Week of June 1, 1982

D. 263,490	4,295,866	4,309,888	4,315,209
3,959,715	4,296,075	4,310,011	4,315,279
4,053,464	4,298,104	4,310,179	4,315,421
4,114,947	4,298,550	4,310,856	4,315,896
4,143,990	4,298,606	4,310,862	4,316,491
4,152,315	4,298,806	4,311,262	4,316,522
4,216,712	4,298,869	4,311,297	4,316,550
4,226,796	4,299,512	4,311,414	4,316,857
4,235,774	4,299,673	4,311,708	4,316,915
4,237,598	4,300,219	4,311,719	4,317,081
4,243,222	4,301,325	4,311,793	4,317,126
4,246,574	4,301,902	4,311,974	4,317,342
4,265,205	4,302,325	4,312,218	4,317,457
4,265,980	4,302,427	4,312,404	4,317,964
4,266,467	4,303,691	4,312,414	4,318,097
4,269,618	4,303,735	4,312,448	4,318,135
4,272,242	4,304,648	4,313,085	4,318,415
4,273,560	4,305,553	4,313,216	4,318,613
4,274,457	4,305,792	4,313,223	4,318,673
4,275,817	4,305,937	4,313,310	4,318,984
4,277,040	4,306,018	4,313,509	4,319,107
4,278,442	4,306,080	4,313,675	4,319,373
4,279,350	4,306,351	4,313,719	4,319,400
4,281,115	4,306,395	4,313,750	4,319,513
4,282,306	4,306,715	4,313,779	4,319,694
4,282,879	4,306,809	4,313,782	4,319,916
4,283,518	4,306,965	4,313,830	4,320,116
4,284,969	4,307,004	4,313,944	4,320,163
4,285,020	4,307,244	4,313,996	4,320,217
4,286,009	4,307,323	4,314,096	4,320,312
4,286,330	4,307,692	4,314,139	4,320,746
4,289,718	4,308,251	4,314,293	4,320,814
4,289,766	4,308,316	4,314,332	4,321,189
4,289,778	4,308,327	4,314,383	4,321,296
4,291,115	4,308,370	4,314,469	4,321,688
4,291,257	4,308,418	4,314,477	4,322,264
4,291,452	4,308,524	4,314,603	4,322,794
4,292,399	4,308,722	4,314,716	4,322,812
4,293,547	4,309,006	4,314,981	4,323,235
4,294,506	4,309,026	4,315,012	4,323,543
4,294,675	4,309,477	4,315,032	4,323,734
4,294,929	4,309,529	4,315,149	4,323,738

Disclaimer

3,342,231.—*Thomas W. Waldrop,* Ronks, Pa. FORAGE HARVESTER. Patent dated Sept. 19, 1967. Disclaimer filed June 8, 1981, by the assignee, *Sperry Corp.*

Hereby enters this disclaimer to claims 4 and 5 of said patent.

Dedication

4,105,637.—*Michael Semanchik,* Lebanon and *David M. Braunstein,* Fanwood, N.J. PROCESS FOR PRODUCING A POLYACETAL POLYMER. Patent dated Aug. 8, 1978. Dedication filed Mar. 5, 1982, by the assignee, *Celanese Corp.*

Hereby dedicates said patent to the Public.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 3, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-16-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-08-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-26-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-05-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-05-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	5-15-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-11-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-01-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	5-29-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,176,314 to 3,181,174, inclusive

Plant Patents ..... Numbers 2,490 to 2,501 inclusive

REEXAMINATIONS

JUNE 1, 1982

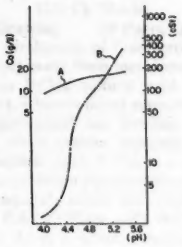
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,246,240

PROCESS FOR SEPARATING COBALT AND NICKEL FROM A SOLUTION CONTAINING COBALT AND NICKEL

Takashi Ogata, Shoichiro Namihisa and Tsumoru Fujii, all of Hitachi, Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Reexamination Request No. 90/000,071, Sep. 17, 1981.
Reexamination Certificate for Patent No. 4,246,240, issued Jan. 20, 1981, Ser. No. 52,736, Jun. 28, 1979.
U.S. Cl. 423/139 **Int. Cl.³ C01G 51/00**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–6 is confirmed.

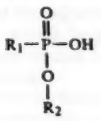
1. A process for separating cobalt and nickel from a solution containing cobalt and nickel by selective liquid-liquid extraction of cobalt into an organic phase, an acid solution containing cobalt and nickel being contacted with an organic extraction medium containing an extractant, and stripping the cobalt with an acid solution, wherein the improvement comprises:

said acid solution being contacted with the organic extraction medium in two or more stages,

a first contact stage being controlled to a pH value not exceeding 5,

a second contact stage and any further contact stages being controlled to a pH value of from 5.5 to 7.0, and

alkyl phosphonic acid monoalkyl ester represented by the formula:



wherein R_1 and R_2 denote alkyl group having 8 to 10 carbon atoms and R_1 may be the same as or different from R_2 being used as the extractant.

DEFENSIVE PUBLICATIONS

PUBLISHED JUNE 1, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T101,901
AMMONIUM POLYPHOSPHATE SULFATE FERTILIZERS FROM WET-PROCESS PHOSPHORIC ACID

Frank P. Achorn, Box 176, Killen, Ala. 35645, and Kenneth E. McGill, Rte. 1, Box 163, Virginia Shores, Sheffield, Ala. 35660

Filed Jul. 20, 1981, Ser. No. 285,213
Int. Cl.[3] C05B *7/00*
U.S. Cl. 71—36
2 Sheets Drawing. 29 Pages Specification

A process for the production of fluid fertilizers (suspensions and/or solution type) made from merchant-grade phosphoric acid (50-58 percent P_2O_5), sulfuric acid, liquid anhydrous ammonia, and water, wherein liquid ammonia is heated in heat exchange means juxtaposed hot fertilizer product to form gaseous ammonia, which gaseous ammonia, along with phosphoric acid and sulfuric acid, is fed to a pipe-cross reactor wherein a melt of ammonium polyphosphate sulfate is formed, which melt is subsequently mixed with cooled recycled product to produce a fluid fertilizer with $N:P_2O_5$ weight ratios ranging from about 0.3 to 1, which contains from about 10 to 60 percent of its P_2O_5 values in the form of polyphosphates and 3 to 8 percent by weight sulfur. About 45 percent of the P_2O_5 as polyphosphate is easily attainable in the product with ambient acid feed temperatures, i.e., about 50° F. to 100° F., versus prior-art teachings of only about 15 percent poly formation with preheat of the feed acids. It is a solution when it is produced, and when diluted with 10 percent by weight water, it can be stored at 40° F. without the formation of troublesome crystals. When gelling clay is added, it stores well as a suspension and remains fluid at temperatures as low as −25° F.

T101,902
PESTICIDAL COMPOSITION AND METHOD FOR TREATING SEEDS PRIOR TO PLANTING

Terrance M. Cannan, 10828 Stone Canyon Rd., Apt. #2327, Dallas, Tex. 75230, and Lloyd A. McDonald, 612 W. Center St., Medina, N.Y. 14103

Filed Mar. 25, 1981, Ser. No. 247,655
Int. Cl.[3] A01N *43/08*
U.S. Cl. 424—81
No Drawing. 28 Pages Specification

A seed treater composition is disclosed for use in application as an aqueous slurry to plant seeds to protect seeds and seedlings against plant pests, which composition comprises 15% to 50% by weight of 2,3-dihydro-2,2-dimethylbenzofuran-7-yl methylcarbamate pest control agent, 0.5% to 15% by weight of 2-ethylhexyl acrylate copolymer emulsion adhesive sticker having a high solids content of 60% to 70% and a viscosity of 0.5 to 4.0 Pa.s at 25° C., and, to 100%, one or more suspending agents and surface active agents, water, and, optionally, other diluents, adjuvants, or other additives as desired.

Disclosed also is a method of protecting plant seeds and seedlings against crop pests, which comprises applying to the seeds the disclosed seed treater composition, and drying the treated seeds to remove excess liquid and to form an adherent coating on the seeds, the pest control agent being dispersed in the adherent coating.

Plant seed, for example wheat, barley, or corn seed, which has been protected against crop pests by an adherent coating containing 2,3-dihydro-2,2-dimethylbenzofuranyl-7-yl methylcarbamate pest control agent, which pest control agent comprises 0.1% to 6% by weight of the protected seed, is also disclosed.

T101,903
FREE RADICAL PROMOTER FOR CURING POLYESTER COMPOSITIONS

John R. Dombroski, 2608 Brighton Ct., Kingsport, Tenn. 37660

Filed Apr. 24, 1981, Ser. No. 257,448
Int. Cl.[3] C08L *67/06*
U.S. Cl. 525—17
No Drawing. 20 Pages Specification

Free radical promoters for use in curing resin compositions comprising an unsaturated polyester and an ethylenically unsaturated copolymerizable monomer are disclosed for use with conventional initiators. The free radical promoters comprise ferrocene or ferrocene substituted on one or both cyclopentadienyl rings with an alkyl, alkoxy, hydroxyl, carboxyl, carboxaldehyde, hydroxyalkyl, amino, halo, cycloalkyl, or aryl radical.

REISSUES

JUNE 1, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

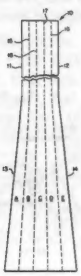
Re. 30,950
FOLDED TIE LINER

Myron H. Ackerman, 2691 S. Course Dr., Bldg. 19, Pompano Beach, Fla. 33060

Original No. 4,123,802, dated Nov. 7, 1978, Ser. No. 831,368, Sep. 8, 1977. Application for reissue Jul. 7, 1980, Ser. No. 166,539

Int. Cl.³ A41D *25/16*

U.S. Cl. 2—144 **7 Claims**



1. A four-in-hand necktie, comprising

an elongate fabric casing having therethrough an elongate central opening, and adapted to be tied intermediate its ends into a knot, when the necktie is in use, and

a [pre-folded, like-weight] *folded, light-weight* fabric liner positioned in the central opening in said casing to improve the body and feel of the necktie,

said liner comprising an elongate piece of fabric folded about a plurality of longitudinally extending fold lines to position at least three longitudinally extending portions of the liner in superposed, substantially registering relation in said casing,

said superposed portions of said liner extending continuously through said casing from at least a point adjacent one end of said opening in the casing at least to a point adjacent the opposite end of said opening, whereby said superposed portions extend beyond opposite sides, respectively, of the knot formed in said casing, when the necktie is in use, and

each of said superposed portions of the folded liner having at least two longitudinal edges thereof movable relative to the adjacent superposed portions of the liner.

Re. 30,951
THERMOPLASTIC STRIPS FOR SLIDING CLASP FASTENERS

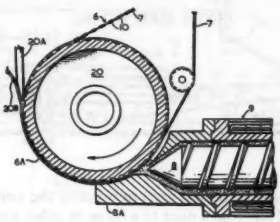
Eric E. Cuckson, Vaucluse, and Arthur L. Jones, Glenbrook, both of Australia, assignors to Scovill Inc., Waterbury, Conn.

Original No. 3,414,948, dated Dec. 10, 1968, Ser. No. 582,918, Sep. 29, 1966. Application for reissue Mar. 16, 1979, Ser. No. 21,001

Int. Cl.³ A44B *19/00*

U.S. Cl. 24—205.13 R **7 Claims**

1. A strip for use in the production of a stringer of a sliding fastener, comprising a row of transversely extending discrete strip-like thermoplastic elements, each element including an enlarged central portion, and opposed leg portions extending transversely from said central portion and defining respective sides of the strip; and two cords extending longitudinally along opposite sides of the strips, each transverse element including enlargements on the ends of the leg portions, the cords extending through the [enlargement] *respective enlargements* and being embedded therein, said enlargements extending from the leg portion longitudinally along the [cord] *respective cords* such that the enlargements of adjacent strips are spaced from one another, whereby said cords provide the sole interconnection between the elements, *the cords being offset from the center of the respective enlargements so that when the strip is folded in U-shape, the cords are disposed close to the confronting surfaces of the respective enlargements.*



Re. 30,952
PERCUSSION DRILL BIT

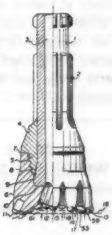
Kenneth M. White, Calgary, Canada, assignor to Western Rock Bit Company Limited, Calgary, Canada

Original No. 4,051,912, dated Oct. 4, 1977, Ser. No. 679,662, Apr. 23, 1976. Application for reissue Jun. 19, 1979, Ser. No. 49,968

Claims priority, application Canada, Feb. 3, 1976, 244910

Int. Cl.³ E21B *10/56*

U.S. Cl. 175—410 **9 Claims**



8. A percussion drill bit having an anvil portion and a head portion having a plurality of cutting inserts arranged on the cutting end thereof, and connecting means therebetween to transmit simultaneously torsional and percussive axial forces from said anvil portion to said head portion, said connecting means comprising a lock nut with an external thread mating with a corresponding internal thread on the head portion, internal splines mating directly with corresponding external splines on the anvil portion, torsional forces being transmitted through said splines, and directly mating abutment surfaces on the anvil portion and head portion, to transmit axial percussive forces without loading said threads, said lock nut when fully threaded into said head portion holding said mating abutment surfaces on the anvil portion and head portion together.

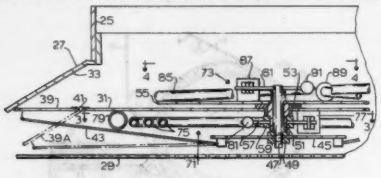
Re. 30,953
THERMALLY ACTUATED DIFFUSER

Robert L. Vance, Cupertino, and Robert W. Noll, Santa Rosa, both of Calif., assignors to Acutherm, Inc., Novato, Calif.

Original No. 4,231,513, dated Nov. 4, 1980, Ser. No. 887,936, Mar. 17, 1978. Application for reissue Jan. 29, 1981, Ser. No. 229,627

Int. Cl.³ F24F 7/00

U.S. Cl. 236—49 **4 Claims**



1. A diffuser of a kind used to regulate the volume flow of conditioned air from a duct to a room or other space comprising,

(a) flow control means for varying the size of an opening in the diffuser to regulate the volume flow of conditioned air from the duct through the diffuser and to the room or other space, and

(b) sensor actuator means operatively associated with the flow control means and responsive to both room air temperature and to duct air temperature for

(1) modulating the flow control means in a normally closed to open mode of operation in response to changes in room air temperature when cooling air is supplied through the duct, and

(2) modulating the flow control means in a normally opened to close mode of operation when warm air is supplied through the duct

said sensor actuator means including a first sensor actuator positioned to sense only room air temperature and a second sensor actuator positioned to sense only duct air temperature,

said flow control means including a [rotatable] *movable* control element, and

wherein the first sensor actuator is connected to [rotate] *move* the control element in one direction in response to increasing room air temperature and the second sensor actuator is connected to [rotate] *move* the control element in an opposite direction in response to increasing duct air temperatures.

Re. 30,954
WHEELCHAIRS

Royal Smith, 4646 Dover St., NE., St. Petersburg, Fla. 33703, and Edward H. D. Carson, 200 Country Club Dr., Largo, Fla. 33540

Original No. 4,046,418, dated Sep. 6, 1977, Ser. No. 707,203, Jul. 21, 1976. Application for reissue Sep. 5, 1979, Ser. No. 72,641

Int. Cl.³ A47C 13/00, 1/035

U.S. Cl. 297—118 **10 Claims**

6. A wheelchair convertible into a wheeled stretcher, comprising:

a pair of wheeled support frame members, horizontally spaced from one another, each having a corresponding rearwardly positioned first pivot, and a forwardly positioned second pivot at substantially the same elevation;

a pair of first lever means, each having a first length and pivotally mounted on a respective one of said first pivots;

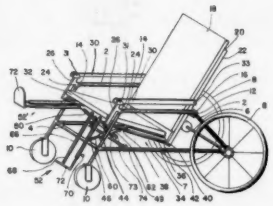
a chair back support having two lateral sides, each proximate to a respective one of said support frame members and each rigidly mounted to the free end of a corresponding one of said first lever means;

a pair of second lever means, each having substantially said first length and pivotally mounted on a respective one of said second pivots;

a pair of front arm members, each rigidly mounted at an intermediate point to the free end of a respective one of said second lever means;

a pair of linkages, each having a first end pivotally connected to one of said front arm members at a point a second length above said intermediate point and a second end pivotally connected to a corresponding one of said lateral sides of said back support at substantially said second length above said mounting point for the corresponding one of said first lever means;

a pair of seat support members, pivot means connecting one end of said pair of seat support members to said chair back support at a third length below said mounting point for the corresponding one of said first lever means, the opposite end of said pair of seat support members being supported by the lower portion of said front arm members at a fourth length below said intermediate point, said third length being greater than said fourth length to thereby position said seat support at an angle θ to the horizontal; and lost motion means operatively connected between said opposite end of said seat support members and the lower portion of said front arm members; the chair back support, the front arm members, the linkages and associated pivot points to said front arm members and said back support, the seat support members and associated pivot means on said chair back and lost motion means on said front arm members, all being substantially horizontally coplanar when the chair is folded to a stretcher position,



whereby a chair seat supported by said pair of seat support members will assume a comfortable angle with respect to the horizontal when the chair is in a seating position, and will assume a horizontal position coplanar with the back of the chair when the chair is in a stretcher position.

Re. 30,955
FIBROUS PRODUCT

Harold P. Stanistreet, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Original No. 4,068,036, dated Jan. 10, 1978, Ser. No. 673,547, Apr. 5, 1976. Application for reissue May 16, 1979, Ser. No. 39,748

Claims priority, application United Kingdom, Apr. 11, 1975, 14962/75

Int. Cl.³ C09J 5/00

U.S. Cl. 156—308.2 **5 Claims**

1. In a method for the production of a low-density, high porosity, resilient, thermally bonded, non-woven fibrous batt having a substantially uniform density across its thickness by the steps of forming a lofty fibrous batt from at least 20% by weight of conjugated staple fibres having a length of 0.5 to 6 inches and being selected from the group consisting of crimped and potentially crimpable fibres, the conjugate fibres being composed of at least two fibre forming polymeric components arranged in distinct zones across the cross-section of the fibre and substantially continuous along the length thereof, one of the components having a softening temperature significantly lower than the softening temperature of a second component and being located so as to form at least a portion of the periph-

eral surface of the fibre, subjecting said batt to a heat treatment to heat the batt to a temperature in excess of the softening temperature of the component having the lower softening temperature but below the softening temperature of the second component to effect inter-fibre bonding, and then causing [or permitting] the batt to cool, the improvement comprising heating the batt by passing a heated gas upwardly through the batt, the gas having a temperature sufficient to effect thermal bonding of the conjugate fibres and having a velocity such that the batt is supported by the gas in a high-porosity condition without disintegrating the batt therein *and causing the batt to cool by an upward passage of cooling air through the batt to quench the fibres and permit them to rapidly redevelop their modulus,* whereby the resulting batt has substantially uniform density across its thickness.

Re. 30,956

WELDING MACHINE FOR THERMOPLASTIC WEB

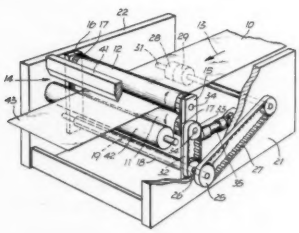
Ehrhart Schulze, Stuttgart, Fed. Rep. of Germany, assignor to Karl Heinz Steigler, Stuttgart, Fed. Rep. of Germany

Original No. 4,207,136, dated Jun. 10, 1980, Ser. No. 968,203, Dec. 11, 1978. Application for reissue Dec. 22, 1980, Ser. No. 218,656

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 2755860

Int. Cl.[3] **B30B** *15/34;* **B32B** *31/00*

U.S. Cl. 156—515 **10 Claims**



1. Machine for producing welds on a thermoplastic web comprising an intermittently operating feed mechanism for feeding said web in successive feeding steps; a welding station effective during standstill of said web between two feeding steps to weld said web and separate it from its end which is advanced beyond the welding station and means for displacing said feed mechanism and the web therein [in] *against* the feeding direction between a first position and a second position.

Re. 30,957

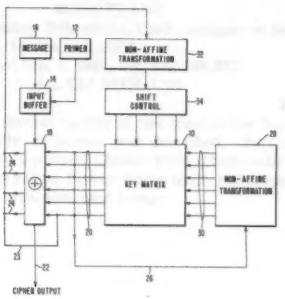
VARIANT KEY MATRIX CIPHER SYSTEM

Horst Feistel, Lexington, Mass., assignor to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,195,196, dated Mar. 25, 1980, Ser. No. 406,728, Oct. 15, 1973. Application for reissue Jun. 30, 1980, Ser. No. 164,402

Int. Cl.[3] **H04L** *9/00*

U.S. Cl. 178—22.17 **11 Claims**



10. A variant key cryptographic system comprising:

means for introducing a plurality of electrical signals in binary form as message information to be enciphered or deciphered;

priming means for presenting a plurality of random binary signals to said input means to initialize the system prior to introducing message information thereto,

means for storing and rearranging a cipher key,

a plurality of modulo-two adders interconnected with each other for adding selected elements from said storage means with binary signals obtained from said input means;

feedback means connected to said plurality of modulo-two adders;

non-affine transformation means connected to said feedback means for transforming the feedback signals present on the lines contained in said feedback means;

control means connected to said non-affine transformation means for rearranging selected elements within said storage means.

PLANT PATENTS

GRANTED JUNE 1, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,853

ROSE PLANT

Dorothy J. S. Bailey, Bakersfield, Calif., assignor to San Joaquin Rose Co., McFarland, Calif.

Filed Sep. 8, 1980, Ser. No. 185,249

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by high centered, flowers of good exhibition form and cadmium yellow petals with orange red petal edges borne primarily singly to a stem.

4,854

ROSE PLANT

Dorothy J. S. Bailey, Bakersfield, Calif., assignor to San Joaquin Rose Co., McFarland, Calif.

Filed Sep. 8, 1980, Ser. No. 185,373

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as shown and described, characterized particularly by very pointed Chinese yellow buds which open to orange red and yellow flowers borne singly and in sprays on a vigorous plant with abundant foliage.

PATENTS

GRANTED JUN. 1, 1982

ERRATA

For CLASS	See PATENT NO.
441–001	4,332,048
441–080	4,332,049
464–109	4,332,147
464–102	4,332,148
374–130	4,332,168
251–240	4,332,285
403–006	4,332,495
415–015	4,332,527
523–220	4,332,620
376–253	4,332,639
376–264	4,332,640
524–539	4,332,701
524–178	4,332,702
524–068	4,332,703
523–203	4,332,704
523–206	4,332,705
523–450	4,332,706
524–476	4,332,707
524–376	4,332,708
523–416	4,332,709
524–591	4,332,710
523–402	4,332,711
524–650	4,332,712
156–328	4,332,713
524–141	4,332,714
524–265	4,332,715
521–137	4,332,716
548–444	4,332,723
548–533	4,332,725
548–533	4,332,726
548–501	4,332,727
548–519	4,332,728
549–229	4,332,729
549–302	4,332,730
549–334	4,332,731
549–332	4,332,732
549–240	4,332,733
549–253	4,332,734

PATENTS

GRANTED JUN. 1, 1982

ERRATA—Continued

For CLASS	See PATENT NO.
549–496	4,332,735
562–512	4,332,743
524–504	4,332,919
524–650	4,332,926
542–417	4,332,948
372–046	4,333,061
346–001	4,333,083
346–017	4,333,084
346–076	4,333,085
346–140	4,333,086
346–140	4,333,087
346–140	4,333,088

PATENTS

GRANTED JUNE 1, 1982

GENERAL AND MECHANICAL

4,332,033
ADJUSTABLE DRESS
Jonathan M. Frank, Chicago, Ill., assignor to Uniforms To You & Co., Chicago, Ill.
Filed Jul. 7, 1980, Ser. No. 165,973
Int. Cl.³ A41D *1/22*
U.S. Cl. 2—105 **12 Claims**

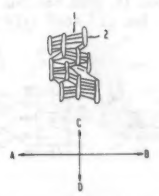
1. An adjustable dress capable of fitting different size women within a selected range of measurements which correspond to at least four consecutive dress sizes, said dress comprising: shoulder portions dimensioned for fitting the shoulders measurement of the largest woman within said selected range, arm holes dimensioned for fitting the arms measurement of the largest woman within said range, a neck opening dimensioned for fitting the neck measurement of the largest woman within said range, upper front portion means dimensioned for fitting the bust measurement of the largest woman within said range, a skirt portion dimensioned for fitting the hips measurement of the largest woman within said range, a midriff portion fixedly secured to and located between said skirt portion and said upper front portions and being of a length for fitting around part of the waist of the smallest woman within said range, said upper front portions, said midriff portion and said skirt portion cooperating to form the front of said dress, back means forming part of the back of said dress and connected to and cooperating with said front for fitting the measurement of the largest woman within said range and waist tightening means operatively associated with said midriff portion for relocating excess body fabric from the front to the back to adjust the garment fit of said dress to any size woman within said range.

4,332,034
GARMENT WAISTBAND STRUCTURES
Ralph F. Muse, Bremen, Ga., assignor to Hubbard Company, Bremen, Ga.
Filed Jul. 1, 1980, Ser. No. 165,137
Int. Cl.³ A41F *9/02*
U.S. Cl. 2—237 **12 Claims**

1. A waistband structure for use in garments comprising:
(a) a two-part elastic band having an upper belt portion offering greater resistance to elongation and a lower skirt portion offering lesser resistance to elongation;
(b) a reinforcement strip attached by a first securing means to the outer face of the elastic band such that the upper linear edge of the reinforcement strip is substantially even with the belt portion edge of the elastic band and the lower linear edge depends freely from the elastic band; and
(c) a waistband fabric web attached along one linear edge thereof by a second securing means to the inside face of the elastic band proximate the belt portion edge thereof.

6. In combination, a garment comprising:
(a) a garment waistband structure comprising:
(i) a two-part elastic band having an upper belt portion offering greater resistance to elongation and a lower skirt portion offering lesser resistance to elongation;
(ii) a reinforcement strip attached by first securing means to the outer face of the elastic band such that the upper linear edge of the reinforcement strip is substantially even with the belt portion edge of the elastic band and the lower linear edge depends freely from the elastic band; and
(iii) a waistband fabric web attached along a first linear edge thereof by a second securing means to the inside face of the elastic band proximate the belt portion edge thereof; and
(b) a garment body attached proximate the upper linear edge thereof by third securing means to the second linear edge of the waistband fabric web and to the lower linear edge of the reinforcement strip by fourth securing means.

4,332,035
POROUS STRUCTURE OF POLYTETRAFLUOROETHYLENE AND PROCESS FOR PRODUCTION THEREOF
Hiroshi Mano, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Nov. 28, 1979, Ser. No. 98,283
Claims priority, application Japan, Nov. 30, 1978, 53/148928; Nov. 30, 1978, 53/148929
Int. Cl.³ D02G *3/00*
U.S. Cl. 3—1.4 **9 Claims**

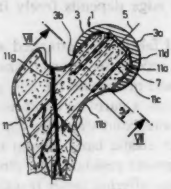


1. A unitary porous structure of polytetrafluoroethylene having a microfibrous structure composed of fibers and nodes connected to one another by these fibers, said microfibrous structure having at one surface a strong orientation in one direction and at another surface a strong orientation in a direction at right angles to the aforesaid direction, the orientation of said microfibrous structure progressively changing from one surface to the other, wherein said structure has a tear strength in a first direction of at least 480 g/ply, and a tear strength in a direction at right angles to said first direction of at least 1,190 g/ply.

4,332,036
UNIVERSAL JOINT PROSTHESIS WITH CAP

Franz Sutter, Niederdorf, and Fritz Straumann, Waldenburg, both of Switzerland, assignors to Institut Straumann AG, Switzerland

Filed Jun. 6, 1980, Ser. No. 157,285
Claims priority, application Switzerland, Dec. 22, 1979, 11400/79
Int. Cl.³ A61F 1/24
U.S. Cl. 3—1.91 16 Claims

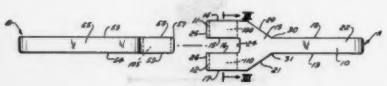


1. A universal joint prosthesis for engaging the head portion of a bone end while retaining the major portion thereof, comprising a cap having a calotte-shaped outer surface terminating in a free edge, an inner surface extending from said free edge symmetrical about a central longitudinal axis and having an osculating surface and defining a concavity in which a bone or the like may be received, the concavity being sufficiently large to contain a major portion of cancellous bone end of the joint, a sleeve member extending in said concavity and at least partly beyond said edge having a wall coaxial to said axis, said sleeve member having a bore extending therethrough from an open first end to a closed second end rigidly connected to the innermost portion of said inner surface, said sleeve member including a plurality of macroscopic holes extending through said wall and wherein an internal diameter of the sleeve member is at least 25% of an internal diameter of a widest portion of the osculating surface of the inner surface of said cap.

4,332,037
ARTIFICIAL JOINT

Ira Esformes, New York, N.Y., and Frederick J. Kummer, Hackensack, N.J., assignors to Hospital for Joint Disease Orthopaedic Institute, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,114
Int. Cl.³ A61F 1/24
U.S. Cl. 3—1.91 17 Claims



1. An artificial joint for implantation into a living body comprising:

(A) a first component, and

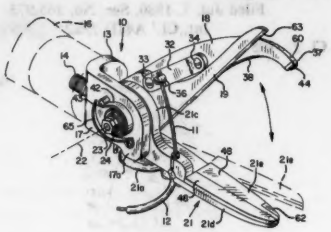
(B) a second component which cooperatively engages said first component, forming a point of engagement having a pivotal axis about which said two components pivot in a primary direction of movement, and (C) a magnet positioned in at least one of said two components with the magnetic lines of force flowing substantially along said pivotal axis and transversely across said primary direction in which said two components pivot

so that said two components are attracted to one another when cooperatively engaged.

4,332,038
ARTIFICIAL HAND

John L. Freeland, 280 Pennsylvania, Apt. 1, San Francisco, Calif. 94107

Filed Dec. 19, 1980, Ser. No. 218,186
Int. Cl.³ A61F 1/06
U.S. Cl. 3—12.6 28 Claims



21. An artificial hand, comprising:

a support base for connecting to the arm of a user;

a wrist connected to the base, with a pivot axis in the wrist;

a pivotal main finger connected along the pivot axis to the wrist, and having a downwardly angled finger tip at its end;

a thumb extending from the wrist and positioned to be contacted by the fingers in its downward, closed position;

means associated with the main finger and the thumb for enabling grasping of rounded objects between them;

a control cable and cable housing adapted for connection to harness apparatus worn on the body of the user;

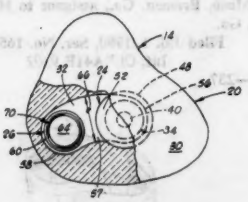
means connecting a forward end of the cable housing to the thumb and means connecting a forward end of the cable, extending from the housing, to the main finger such that retraction of the cable in the housing pulls the finger toward the thumb to contact the finger tip with the thumb;

means biasing the main finger away from the thumb toward its normal open position.

4,332,039
OCULAR PROSTHESIS WHICH SIMULATES CHANGE IN PUPIL DIAMETER

Henry LaFuente, 608 Stanton L. Young Blvd., Oklahoma City, Okla. 73104

Filed Oct. 31, 1980, Ser. No. 202,699
Int. Cl.³ A61F 1/16
U.S. Cl. 3—13 12 Claims



1. An improved ocular prosthesis comprising:

a body portion having an anterior surface, a spatially disposed posterior surface, and a channel formed therebetween;

iris forming means disposed on the anterior surface of the body portion, the iris forming means having a transparent central portion, an outer iris colored portion, and a pupil colored area selectively positioned in the transparent central portion, the transparent central portion substan-

tially corresponding in size to a pupil of a natural eye when same is exposed to indirect light, the pupil colored area substantially corresponding in size to the pupil of the natural eye when same is exposed to direct light;

pupil colored surface forming means disposed within the body portion between the posterior surface of the body portion and the channel such that the pupil colored surface forming means is substantially adjacent the channel and at least a portion of the pupil colored surface forming area is aligned with the transparent central portion of the iris forming means; and

an iris colored member positioned within the channel of the body portion and selectively movable between a first position and a second position, in the first position the iris colored member being in a non-interposing relationship between the transparent central portion of the iris forming means and the pupil colored surface forming means, in the second position the iris colored member being interposed between the transparent central portion of the iris forming means and the pupil colored surface forming means.

4,332,040

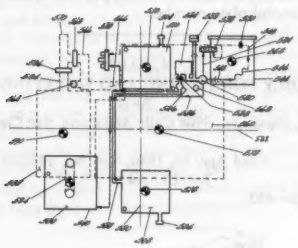
SELF-CONTAINED, COMPACT TOWABLE FACILITY HAVING MAXIMIZED BALANCED WATER STORAGE DRAIN WATER COLLECTION AND WASTE WATER ISOLATION SYSTEMS

William A. Palmer, P.O. Box 1184, Somis, Calif. 93066

Filed Mar. 10, 1980, Ser. No. 129,180

Int. Cl.³ B60R *15/00;* **A47K** *4/00;* **E03D** *7/00*

U.S. Cl. 4—300 **16 Claims**



1. A compact self-contained towable facility having a minimum size and weight while maximizing the volume of water carried thereby comprising

a rigid frame having a tow bar extending from the front end thereof and being adapted to be coupled to a towing vehicle;

a plurality of wheels including an axle suspended from said frame and positioned slightly rearward of the lateral centerline of the frame;

a multi-stage potable water storage and drain and waste water collection and isolation system including

a potable water storage system having a predetermined volume and adapted to be filled externally of the facility, said potable water storage system being attached to said frame and having a geometrical shape to enable the collective center of gravity thereof to be located at approximately the centerline of the axle independent of the volume of potable water stored in the potable water system and the amount of potable water withdrawn therefrom;

a grey water collection system having a predetermined volume and adapted to receive and collect drain water having a low impurity content, said grey water collection system being attached to said frame between the wheels defining said axle and under said potable water storage system; and

a black water isolation system having a predetermined volume and adapted to receive and isolate waste water having a high impurity content, said black water isolation system being attached to said frame and adjacent to the grey water collection system;

said grey water collection system and black water isolation system having geometrical shapes to enable the collective center of gravity thereof to be located at approximately the same location as the collective center of gravity of the potable water storage system independent of the volume of grey water and black water collected in the grey water collection system and black water isolation system and the amount of grey water and black water deposited therein;

means operatively coupled to the potable water storage system and adapted to be connected to an external source of potable water for transporting potable water from at least one of the potable water storage system and external potable water source to at least one grey water usage device which produces drain water having a low impurity content during usage thereof, and to at least one black water usage device which produces waste water having a high impurity content during use thereof; and

water system distribution means operatively coupled to said grey water usage device to selectively transport grey water therefrom to said grey water collection system and including means operatively coupled to said black water usage device to selectively transport black water therefrom to said black water isolation system, said multi-stage potable water storage and drain and waste water collection and isolation systems' collective centers of gravity remaining at substantially the same location independent of the volume and amount of water deposited and stored in and between the potable water storage system, the grey water collection system and the black water isolation system wherein the rigid frame and multi-stage potable water storage and drain and waste water collection and isolation systems enable the towable facility to have a minimum size and weight while maximizing the volume of water carried thereby while also minimizing variations of the force applied by the tow bar on the towing vehicle over a selected limited force range.

4,332,041

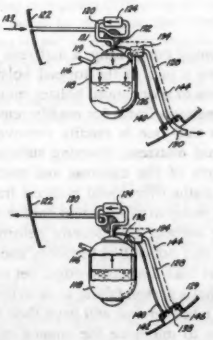
PRESSURIZED DRAIN FOR TOILET WASTE TANK

Bjorn R. Kristoffersen, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 24, 1980, Ser. No. 209,716

Int. Cl.³ E03D *5/016, 11/00;* **B64D** *11/02*

U.S. Cl. 4—316 **9 Claims**



1. In a vacuum flush toilet system, an apparatus for draining waste from the system, said apparatus comprising:

a waste holding tank for receiving waste from the toilet, said tank having an upper portion and a lower portion and

having a pressurization port and a waste drain opening formed in said upper portion;

pressurization/vent means coupled to said pressurization port for pressurizing the interior of said tank in a first position of operation and to vent said tank in a selectively second position of operation; and

an internal drain conduit having a first and second end, said first end being located adjacent the bottom of said waste holding tank below the normal level of waste within said tank and said second end coupled to said waste drain opening.

8. In an aircraft lavatory system of the type providing a vacuum flushing capability wherein said vacuum for flushing said lavatory system is provided by a blower which vents air from a waste holding tank to the exterior of the aircraft, the improvement comprising:

directional flow control means coupled to said blower means and said waste holding tank and selectively operable to direct the flow of air from said blower into said tank in a first position of operation, thereby pressurizing said tank to aid in the removal of waste material from said waste holding tank and to direct air from the tank to the blower to the open atmosphere in a second position of operation.

4,332,042

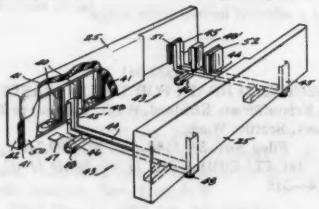
GERIATRIC ENVIRONMENTAL SYSTEMING

Joseph A. Koncelik, Worthington, Ohio, assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 31, 1980, Ser. No. 136,095

Int. Cl.³ A47C *19/22*; A61G *7/00*; A47C *21/00*

U.S. Cl. 5—424 **15 Claims**



1. A bed assembly comprising: a mattress; a frame supporting said mattress; a pair of flat-topped bolsters elongated in parallel directions of elongation; bolster mounting means distinct from said mattress frame for readily removably mounting said bolsters so that one is readily removably disposed on either side of said mattress, covering substantially the entire height and length of the mattress and mattress frame, and exterior of and distinct from said mattress frame; each bolster being formed of material of sufficient hardness so that a person may sit thereon without significantly deforming the same to facilitate in-bed and out-of-bed transfers, each bolster providing more support than a mattress edge, yet each bolster being soft enough so that a person falling so as to impact a side of the bed will impact a bolster and will have their fall cushioned by the bolster so as to minimize the chance of injury; and said bolster mounting means comprising means for mounting said bolsters with respect to said mattress so that the flat top surface of each of said bolsters may be substantially even with the top of said mattress and so that a person impacting the bed assembly along the sides will impact a bolster.

4,332,043

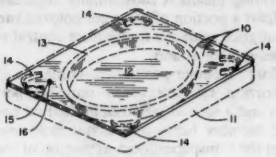
WATERBED MATTRESS

Lynn D. Larson, Rural Route, Walton, Nebr. 68461

Filed Jan. 14, 1980, Ser. No. 111,594

Int. Cl.³ A47C *27/08*

U.S. Cl. 5—450 **6 Claims**



1. An improved waterbed mattress of a type having a flexible water-filled bladder in which said bladder has a recloseable opening for adding and removing water and air from said bladder wherein the improvement comprises:

(a) at least one bouyant, flexible, foam, horizontal plate member, located inside said bladder and unattached to any surface of said bladder;

(b) appendages depending from the lower surface of said horizontal plate member, wherein said appendages comprise plates having vertically inclined faces extending to a depth of at least half the distance to the bottom wall of said bladder; and

(c) attachment means for attaching said appendages to said horizontal plate member.

4,332,044

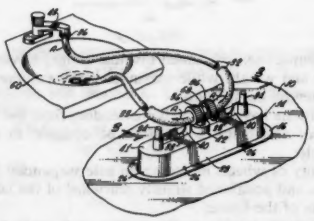
ASSEMBLY FOR FILLING AND EMPTYING A WATER BED

Leroy M. Houk, Jr., 3908 Calle Andalucia, San Clemente, Calif. 92672

Filed Apr. 18, 1980, Ser. No. 141,338

Int. Cl.³ A47C *27/00*

U.S. Cl. 5—453 **10 Claims**



1. In a mattress of a type having a flexible, hollow, collapsible shell adapted for filling with liquid to provide buoyant shape-conforming support for the user thereof, the improvement comprising:

a venturi pump of the type having an inlet side, an outlet side, and a suction conduit, for emptying liquid from said mattress;

a pair of flexible hoses adapted for detachable fluid communication with the inlet side and the outlet side of said pump, said hoses being sufficiently radially nonrigid to be collapsed into coils having substantially flat cross sections for storage; and

a housing disposed in said shell, said housing having a cross sectional area and depth sufficient to store said pump and hose coils without any portion thereof extending beyond the outer surface of said shell when the mattress is filled with liquid.

4,332,045

METHOD AND APPARATUS FOR ECONOMICALLY MAINTAINING AND BREEDING BEES IN A BEE COMPOUND UNIT

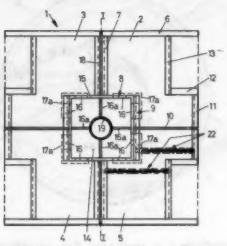
Matthias Schmidt, Mosbach, Fed. Rep. of Germany, assignor to imka Forschungsgesellschaft fur Bienenzucht mbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 3, 1980, Ser. No. 183,845

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935934

Int. Cl.³ A01K *47/06, 57/00*

U.S. Cl. 6—1 **22 Claims**



2. Apparatus for economically maintaining and breeding bees comprising: a bee compound unit subdivided into a plurality of separate, adjacent compartments, each of said compartments adapted to house a queen bee and nursing bees; a central assembly and feeding chamber having a plurality of passages respectively connected to the compartments and arranged so that said nursing bees positioned in each of said compartments can move indirectly to any other of said compartments via the assembly and feeding chamber; means for preventing each queen bee in a given compartment from moving into another compartment; and walls between the adjacent compartments for preventing bees in one compartment from moving directly to another compartment, whereby only one compartment is used to treat bees from all of the compartments by removing swarming bees from said one compartment.

4,332,046

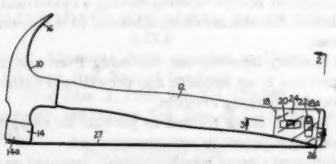
COMBINED HAMMER AND LEVEL

Clifford T. Foley, 22131 NE. Garner Rd., Yacolt, Wash. 98675, and Carl W. Brandenfels, P.O. Box 1208, St. Helens, Oreg. 97051

Continuation-in-part of Ser. No. 45,785, Jun. 5, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 176,667

Int. Cl.³ B25F *1/00*

U.S. Cl. 7—146 **5 Claims**



1. A hammer construction comprising

(a) a head having a striking surface and side surfaces,

(b) a handle having opposite end portions one of which is secured to said head and the other of which comprises a hand grip end,

(c) a recess in said hand grip end of said handle having a bottom wall,

(d) a pair of spirit levels supported on said bottom wall of said recess disposed at right angles to each other for determining the plane of surfaces in a direction longitudinally of said bottom wall and also in a direction laterally of said bottom wall,

(e) a bullseye level also supported on said bottom wall for determining the plane of a surface in directions longitudinally and laterally of said bottom wall as well as all directions therebetween,

(f) and a transparent plastic filler securely embedding all of said level means,

(g) said plastic filler being flush with the surrounding surface of said handle whereby said plastic filler serves as a grip portion of said handle,

(h) said pair of spirit levels and said bullseye level being secured in place in said filler on said bottom wall,

(i) said hammer having surface engaging points specifically related to the plane of said recess bottom wall whereby upon engaging said surface engaging points on a surface, the plane of a surface can be determined in said longitudinal and lateral directions and all directions therebetween.

4,332,047

METHOD FOR EXTRACTING WATER FROM LAUNDRY

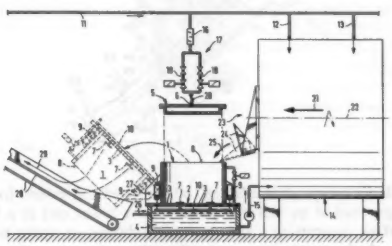
Rudolf Küttelwesch, Niedernhausen, Fed. Rep. of Germany, assignor to Mewa Mechanische Weberei Altstadt GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 188,993

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940217

Int. Cl.³ D06F *31/00, 39/08*

U.S. Cl. 8—158 **4 Claims**



1. In a laundering process which includes providing steam at high pressure, directly blowing the steam into fresh water in order to heat the water, and washing and rinsing laundry using the heated fresh water, the improvement wherein said step of directly blowing comprises delivering at least part of the steam into the fresh water by directing that steam through laundry which has been rinsed while subjecting the steam to a pressure reduction in a manner to cause the steam to extract rinse water from the laundry which has been rinsed; and conducting the steam and the extracted rinse water into the fresh water in order to heat the fresh water with accompanying condensation of the steam.

4,332,048

LOCKABLE SUPPORT FLOAT

Roger C. Eddy, 3101 Fernwood La., New Castle, Pa. 16105

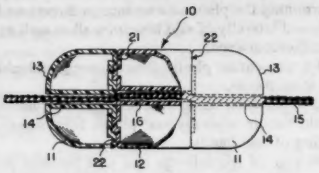
Filed Mar. 3, 1980, Ser. No. 126,250

Int. Cl.³ B63B *21/52, 51/02*

U.S. Cl. 441—1 **10 Claims**

1. A lockable support float comprising at least a first and second float member each of which includes at least one end having rotatable connecting means, each of said members including an opening therethrough eccentrically positioned with respect to the centerline of said support float and alignable with each other; said connecting means of said first member comprising a concentric annular groove having at least two projections extending across a portion of said groove; and

said connecting means of said second member comprising a concentric annular extension having an annular flange at the



outer edge thereof adapted to engage the projections of said groove, said extension being of substantially the same inner and outer diameter and width as said annular groove.

4,332,049

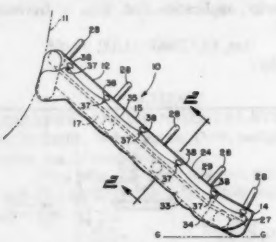
ESCAPE SLIDE AND PROTECTIVE SHIELD

John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 19, 1980, Ser. No. 122,391

Int. Cl.³ B61G *9/00*; B64D *25/14*

U.S. Cl. 441—80 **3 Claims**



1. An escape slide adapted to be inflated and extend from an upper end at an elevated position to a lower end at a lower surface comprising a slide portion including an upper surface on which persons are transported, side portions at each edge of said side portions, and a protective shield of flexible sheet material covering said bottom portion and at least a part of said side portions, wherein said protective shield is divided into at least two longitudinally extending sections having center edges releasably fastened together so that said sections may be detached and positioned over said upper surface as a canopy to protect persons using said escape slide as a life raft.

4,332,050

SELF-PROPELLED RECORD CLEANER

Tadanobu Okuda, Toyonaka, Japan, assignor to Kyushu Hitachi Maxell, Ltd., Fukuoka, Japan

Filed Nov. 26, 1980, Ser. No. 210,815

Claims priority, application Japan, Nov. 27, 1979, 54-164454[U]

Int. Cl.³ B08B *11/00*; G11B *3/58*

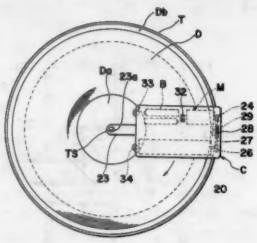
U.S. Cl. 15—246 **4 Claims**

1. A self-propelled record cleaner for cleaning a disc record having a center opening, a non-grooved area coaxial with the center opening, a grooved area coaxial with the center opening and positioned on one side of the non-grooved area opposite to the center opening and an outer peripheral margin, all being defined on at least one surface of the disc record, said disc record being mounted on a support having a spindle which, when the disc record is so mounted with said at least one surface thereof facing in a direction opposite to the support, projects through the center opening, said self-propelled record cleaner comprising, in combination:

a generally elongated casing having a dust collecting chamber defined therein;

a generally cylindrical cleaning element supported in the casing so as to extend in a radial direction of the disc record when the record cleaner is mounted on the support with the disc record held between the support and the record cleaner;

means carried by the casing for engagement with the spindle to enable the casing to rotate around the spindle;



means for defining a passage for guiding dusts being removed from the disc record by the cleaning element into the dust collecting chamber;

a drive wheel adapted to run on the disc record and rotatably carried by the casing; and

means for driving said drive wheel and said cylindrical cleaning element in opposite directions with each other.

4,332,051

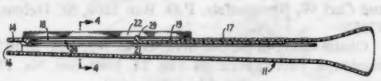
ATTACHMENT TOOL FOR A VACUUM CLEANER HOSE

Salvatore LaMonte, 920 Ward Ave., #8F, Honolulu, Hi. 96814

Filed Oct. 6, 1980, Ser. No. 194,672

Int. Cl.³ A47L *9/06*

U.S. Cl. 15—328 **10 Claims**



9. An attachment tool for a vacuum cleaner hose, comprising

an elongated hollow housing having a cylindrical open end formed for releasable attachment to a vacuum cleaner hose,

said housing tapering and flattening from said cylindrical open end to an opposite end providing a flattened intake port for cleaning crevices,

said housing being formed to provide an elongated intake opening adjacent to said opposite end,

an elongated closure member slidably mounted on said housing for selective movement between advanced and retracted positions covering and uncovering said elongated intake opening,

and first and second strip brushes mounted on said housing alongside the longer opposite sides of said elongated opening,

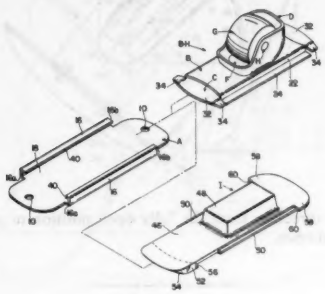
said strip brushes having bristles projecting away from said housing a minimal distance whereby with said closure member in said retracted position said tool is insertable between slats of a venetian blind.

4,332,052

SUPPORT ASSEMBLY FOR LUGGAGE

Richard C. Remington, Pompton Plains, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Garfield, N.J.

Filed Jun. 13, 1978, Ser. No. 915,266
Int. Cl.³ B60B 33/00; A47B 91/06
U.S. Cl. 16—30 20 Claims



1. A support assembly comprising a base plate adapted to be attached to an object to be supported and having a pair of parallel channels with open ends, a support unit adapted to be removably attached to the base plate, the support unit including a frame plate having substantially planar opposite edge portions adapted to be retained by the channels upon lengthwise insertion of the frame plate into the channels, releasable latch means at a leading end of the frame plate, said latch means being adapted to flex in a direction substantially perpendicular to the plane of said edge portions to permit lengthwise insertion of the frame plate into said channels from one end of the channels, the latch means being further adapted to emerge from the opposite end of said channels and return to an unflexed condition upon continued insertion of the frame plate, abutment means on said base member for engaging said latch means upon emergence of the latch means from the channels and return of the latch means to the unflexed condition, said abutment means preventing unintentional withdrawal of the frame plate from the channels, and cooperative stop means on the frame plate and base plate for limiting insertion of the frame plate into the channels and substantially preventing lengthwise movement of the frame plate relative to the base plate when said latch means is in engagement with said abutment means, the latch means being disengageable from the abutment means for withdrawal of the frame plate from the base plate by flexure of the latch means in said direction.

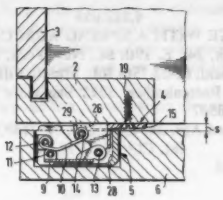
4,332,053

CONCEALED HINGE FOR DOORS, FLAPS, OR THE LIKE

Luciano Salice, Carimate, Italy, assignor to Deutsche Salice GmbH, Freiberg, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,299
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2912627
Int. Cl.³ E05D 3/06
U.S. Cl. 16—370 51 Claims

1. A concealed hinge for doors, flaps or the like comprising a stationary hinge portion and a pivotable cup-shaped hinge portion which is provided with a securing flange, said hinge portions being pivotally interconnected by two links to form a four-bar linkage, characterised in that the stationary hinge portion (4, 30) consists of a flat securing plate (15) with two parallel bearing flanges (20, 21) perpendicular thereto, that the pivot pins (13, 14) for the two links (9, 10) are secured at such a height in the bearing flanges (20, 21) that, in the closed position of the hinge (1), they project into the cup-shaped hinge portion to at least under the top of the securing flange (8), and that the securing flange (8) consists of at least one flat plate-like



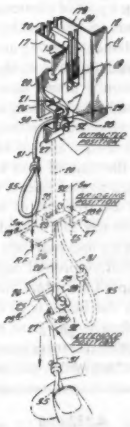
member which, in the closed position, lies adjacent the securing plate (15) in the plane thereof.

4,332,054

BLOCK AND TACKLE WINDOW SASH BALANCE AND INSTALLATION METHOD

H. Palmer Paist, Broomall, and Barry M. Jones, Berwyn, both of Pa., assignors to Quaker City Manufacturing Company, Sharon Hill, Pa.

Filed Jun. 9, 1980, Ser. No. 157,858
Int. Cl.³ E05D 13/12
U.S. Cl. 16—197 8 Claims



1. In a window sash balance comprising an elongated tubular housing frame, a helical spring, a block and tackle assembly, and a foot member adapted for engagement with the under edge of a window sash when aligned in a bridging position at the lower end of the frame housing; and in which said spring and said block and tackle assembly are positioned within wall portions of the housing frame; one end of the spring is anchored relative to the housing frame; one pulley block is anchored to the housing frame at a point separated from the spring anchor point; the other pulley block is connected to the unanchored spring end; the tackle cord is secured to one of the pulley blocks and is sequentially trained over the pulley block sheaves terminating in engagement with the foot member which bridges the lower end of the housing frame; the length of the tackle cord being such that the foot member will be held against the lower end of the housing frame end by biasing action of the spring when the foot member is aligned in a bridging position relative to the walls of the frame, the improvement characterized in that a lanyard is secured to the foot member, said lanyard being of a length that it will extend outwardly from the end of the housing frame when the foot

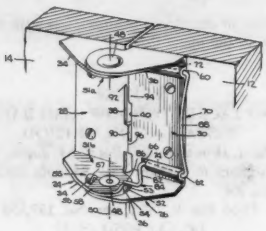
member has been disengaged from its bridging position and is retracted within the housing frame.

4,332,055

HINGE WITH A SPRING ARM CATCH

Jack Z. Rudnick, 242 E. 19th St., New York, N.Y. 10003; Edward B. Okonski, 61-53 75th Rd., Middle Village, N.Y. 11379, and John J. Rottenkolber, 3522 Sagamore Trail, Mohegan Lake, N.Y. 10547

Filed Apr. 24, 1980, Ser. No. 143,501
Int. Cl.³ E05D *11/08*
U.S. Cl. 16—335 **15 Claims**



1. A hinge comprising a pair of elements, means for pivotally connecting said elements to one another at a common pivot axis, a first one of said elements having an undulate cam surface which extends about said pivot axis, the second one of said elements defining a generally planar base surface and an elongated groove open to said base surface, and a spring including a generally straight leg releasably received in said groove and an arm extending from a first end of said leg to a free end which is remote from the axis of said leg, said spring being constructed and arranged to bias said arm pivotally about the axis of said leg to urge the free end of said arm towards said cam surface, whereby the free end of said arm will engage said cam surface and said spring and said cam surface will cooperatively yieldably resist relative pivotal motion of said elements, said elements being adapted for attachment to respective ones of the structures which the hinge is to connect in service so that, during such attachment said base surface will overlie a surface of the one of such structures associated with said second element and that surface will retain said leg in said groove.

4,332,056

INFINITE POSITION DOOR HOLD-OPEN

Henry W. Griffin, Birmingham, and Arthur W. Hollar, Jr., Grosse Pointe, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 8, 1980, Ser. No. 176,414
Int. Cl.³ E05D *11/08, 11/10*
U.S. Cl. 16—341 **3 Claims**

1. In combination with a vehicle having a door, an infinite position door hold-open comprising,

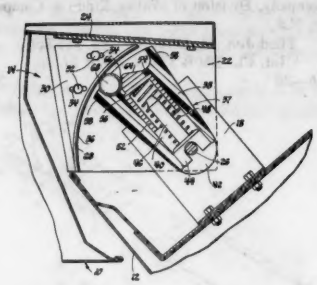
a pair of hinge members rotatable relative to another for mounting the door on the vehicle body for movement between open and closed positions,

one hinge member including an arcuate friction layer radially disposed about the axis of the hinge members,

the other hinge member including therein a cavity which opens to the friction layer and includes a spaced pair of roller retention surfaces,

a roller which rolls in the cavity along the friction layer from engagement with one retention surface to the other during door opening and closing movement,

and resilient biasing means included on the other hinge member and including a wedging member face resiliently wedging the roller against the friction layer and one of the retention surfaces as the door is initially moved in a closing direction from the fully open position to provide a hold-open.

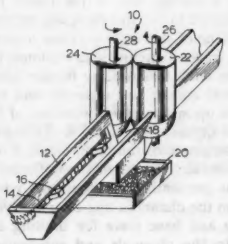


4,332,057

APPARATUS FOR MECHANICALLY EXTRACTING FISH ROE

Charles M. Smith, Box 957, Cordova, Ak. 99574

Filed Jun. 20, 1980, Ser. No. 161,372
Int. Cl.³ A22C *25/00*
U.S. Cl. 17—55 **5 Claims**



1. A device for removing the roe from a fish after head removal introduced tail-first and belly-up into said device comprising:

at least one V-shaped trough, each said trough for maintaining the fish in the proper position before extraction of the eggs;

a compressing means for applying inwardly directed force along a vertical plane on each side of the fish, extracting roe from the head end of the fish as the fish passes through said compressing means, said compressing means connected to each said trough;

said compressing means includes a pair of driven resilient rollers, each roller rotatable about a vertical axis and in substantially tangential relation;

said pair of resilient rollers for pressibly contacting each side of the fish fed therebetween to urge the roe out of the fish body opening resulting from said prior head removal;

each said vertical axis aligned substantially perpendicular to the longitudinal dimension of said trough;

a feeding means for transporting the fish through said trough, said feeding means operatively connected to said trough;

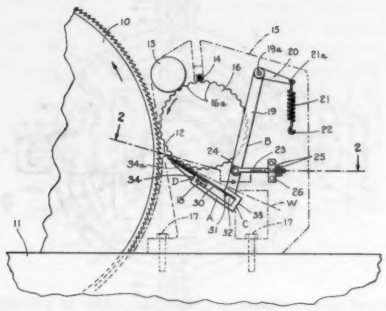
each said trough having an aperture adjacent said compressing means for allowing passage of the extracted roe.

4,332,058

WEB DOFFING APPARATUS

William A. Warnock, Lyman, S.C., assignor to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Filed Apr. 28, 1980, Ser. No. 144,597
Int. Cl.³ D01G *15/46*
U.S. Cl. 19—106 R 4 Claims



1. An apparatus for removing a fibrous web from a rotatable web carrying member utilizing a rotatable roll adjacent said member and a flexible blade in tangential contact with said roll forming an entrance opening for the web adjacent a free end of the blade, a blade support comprising:

an elongated support member;

pivoted linkage means releasably mounting said support member in predetermined aligned relation with said rotatable roll;

receiving means carried adjacent one edge of said support member remote from said roll into which a portion of said blade opposite said free end may be inserted and removably retained;

a projecting portion carried adjacent the other edge of said support member urging said blade into resilient engagement with said roll;

resilient means urging said linkage means toward said predetermined position, and

stop means retaining said linkage means in said predetermined position against the action of said resilient means;

whereby said support member may be released from said aligned relation with said roll to facilitate removal of said blade for servicing.

4,332,059

DRIVE FOR DRAFTING ARRANGEMENT ROLLS OF LONG SPINNING MACHINES

Juerg Bischofberger, Neftenbach, and Arthur Wuermli, Winterthur, both of Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

PCT No. PCT/EP79/00068, § 371 Date May 29, 1980, § 102(e) Date May 19, 1980, PCT Pub. No. WO80/00717, PCT Pub. Date Apr. 17, 1980
PCT Filed Sep. 3, 1979, Ser. No. 196,912
Claims priority, application Switzerland, Sep. 29, 1978, 10175/78
Int. Cl.³ D01H *1/22, 13/14*
U.S. Cl. 19—244 5 Claims

1. A drive for the driven drafting rolls of a drafting arrangement of long spinning machines, wherein the drafting rolls extend over an appreciable part of the length of the machine, especially for ring spinning machines, the driven drafting rolls of the drafting arrangement being arranged at the same longitudinal side of the spinning machine, comprising:

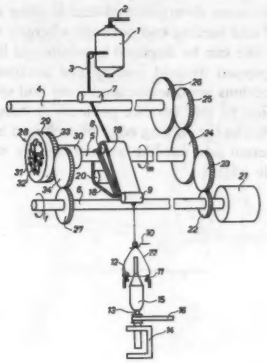
said driven drafting rolls defining a main drafting zone for a fiber sliver which is to be drafted and containing a faster running roll and a slower running roll;

said drafting rolls having opposed ends;

first substantially slippage-free transmission elements for mutually connecting said drafting rolls at their one opposed ends and for effectuating a ratio of rotational speeds of said drafting rolls in order to determine a predetermined draft ratio for said fiber sliver;

second substantially slippage-free transmission elements provided for the other opposed ends of the drafting rolls defining said main drafting zone;

said second slippage-free transmission elements containing a freewheel clutch;



said second slippage-free transmission elements having a rotational speed ratio lower than the ratio of the rotational speeds determining said draft ratio;

said second slippage-free transmission elements, during normal operation of the spinning machine, selectively allowing either the faster running one of the drafting rolls of the main drafting zone to lag or the slower running drafting roll of the main drafting zone to lead; and

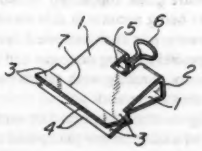
said freewheel clutch during standstill of the faster running roll effecting a slippage-free connection between the slower running roll and the faster running roll via the said second slippage-free transmission elements.

4,332,060

SPRING CLIP FOR HOLDING SHEETS OF PAPER OR THE LIKE

Hisao Sato, 10, Toyotamaminami-3-chome, Nerima-ku, Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 142,714
Claims priority, application Japan, Apr. 28, 1979, 54-57827[U]
Int. Cl.³ B42F *1/02;* A44B *21/00*
U.S. Cl. 24—67.9 16 Claims



1. A spring clip for holding sheets of paper or the like, comprising a pair of cooperating confronting holding members, each said holding member having opposite side edges, a free continuous leading end portion, including a leading edge, a rear portion opposite said leading end portion and joining means for resiliently joining said holding members together at their respective rear portions such that said leading end por-

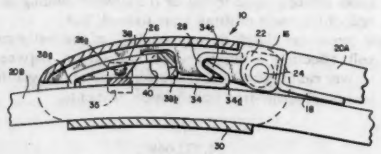
tions are normally resiliently biased against each other with a predetermined clamping force, the joining means having no means for diverging said holding members, at least one of the side edges of one of the holding members corresponding to one of the side edges of the other said holding member, an ear-like projection for diverging said holding members extending a predetermined amount from each of said corresponding side edges and having portions spaced from each other to permit insertion of a spreader member between said ear-like projections in removable relationship for exertion of a separating force by said spreader member against each of said ear-like projections to cause divergence of said holding members and separation of said leading end portions whereby said sheets of paper or the like can be disposed between said holding members to be gripped by said leading end portions when said ear-like projections are disassociated from said spreader member, no portion of said ear-like projections being in contact with each other at the leading edge of each said holding member, and wherein said ear-like projections are stepped away from said side edges.

4,332,061

ADJUSTABLE BRACELET CLASP

Kurt A. Rieth, Warwick, and Stephen F. Bert, W. Warwick, both of R.I., assignors to Textron, Inc., Providence, R.I.

Filed May 12, 1980, Ser. No. 148,988
Int. Cl.³ A44B *11/25*
U.S. Cl. 24—343 **7 Claims**



1. An adjustable clasp for interconnecting two sections of a bracelet, including in combination a coupling assembly secured to the end of one bracelet section, and a clamp assembly detachably fixable at selected locations along the length of the other bracelet section and being engageable with said coupling assembly, said clamp assembly comprising:

a bottom wall with opposed side walls extending substantially normal thereto;

a resilient pressure plate supported by said side walls, said pressure plate being arcuate in side elevation with a given radius of curvature in the unstressed or relaxed condition and with oppositely facing concave and convex sides, said concave side cooperating with said bottom wall to define a space therebetween; and

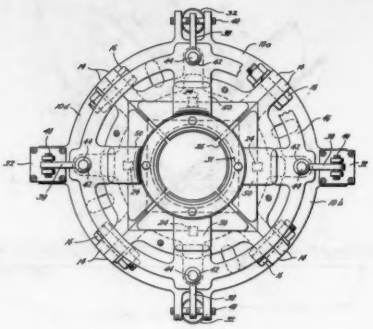
a rigid clamping member supported by said side walls on the convex side of said pressure plate, said clamping member being adjustable between an open position permitting limited movement of said pressure plate relative to said bottom wall in order to accommodate slidable movement of the said other bracelet section through said space, and a closed position contacting said convex side and resiliently deflecting said pressure plate to increase its radius of curvature and to positively grip the said other bracelet section between the concave side of said pressure plate and said bottom wall.

4,332,062

BOWL STRUCTURE

Joseph H. Byrne, Jr., Houston, Tex., assignor to Bowen Tools, Inc., Houston, Tex.

Filed Feb. 19, 1980, Ser. No. 122,420
Int. Cl.³ F16I *7/00*
U.S. Cl. 24—263 DA **6 Claims**



1. Improved well bowl, comprising:

(a) a well bowl with an opening extending through the bowl, at least a portion of which is formed in the shape of a pyramidal frustum, the bowl being formed in a plurality of sections, each section including no more than one side of the pyramid-shaped opening, and means for connecting the sections together,

(b) a plurality of slips movable along the pyramidal surfaces and together defining an inner opening, the slip surfaces which define the inner opening being adapted to engage and hold the outer surface of a length of drill pipe when the slips are moved toward the smaller end of the bowl opening and to be disengaged from the drill pipe when the slips are moved away from the smaller end of the bowl opening, the slips further having outer surfaces shaped to engage at least a portion of the surfaces which define the bowl opening when the slips move between their engaging and disengaging positions,

(c) guide means for guiding the slips along the surfaces which define the bowl and maintaining the slip surfaces which engage the pipe oriented in their pipe engaging positions when they move along the bowl surfaces, and

(d) means for simultaneously moving the slips between their engaging and disengaging positions.

4,332,063

FABRIC SINGER BURNER AND MANIFOLD ASSEMBLY

Henry S. Ehrhardt, Clemson, S.C., assignor to Industrial Heat Engineering, Mauldin, S.C.

Filed Oct. 6, 1980, Ser. No. 194,562
Int. Cl.³ D06C *9/02*
U.S. Cl. 26—3 **3 Claims**

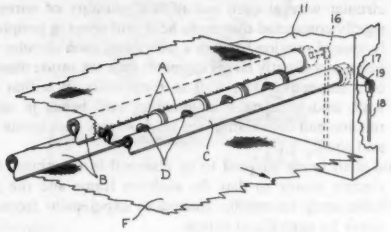
1. A burner and manifold assembly for use in a fabric singer having fluid cooled fabric backup rolls about which the fabric moves in open width for opening the interstices of the fabric for accessibility to flame therealong from a burner having a fuel supply manifold extending in substantial alignment therewith, and having means for bring about a cessation of impingement of the flame upon the fabric when fabric movement is discontinued comprising:

a tubular cast iron burner carried horizontally transversely of the machine in substantial alignment with each of the backup rolls for delivering a sheet of flame therealong for impinging directly upon the opened fabric moving about the backup rolls;

a tubular manifold behind each said tubular cast iron burner, remote from said flame so as to maintain a lower tempera-

ture during operation than does said cast iron burner, constructed from a material possessing a coefficient of expansion resulting in expansion substantially compatible with the expansion of the cast iron at operating temperatures;

an end pass-through connector adjacent each end of said burner and said manifold providing fuel and heat flow between said cast iron burner and said manifold; and



a plurality of additional spaced connector means between said end connectors forming the burner and manifold assembly;

whereby heat and fuel are uniformly transferred between said burner and said manifold along the length thereof to minimize the bow of the assembly through even heat distribution as well as to facilitate a uniform flame along the assembly.

4,332,064

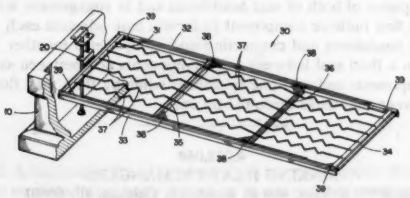
BODY SUPPORT FRAME FOR A CASKET

Robert K. Foust, 301 Mary Kay, Connersville, Ind. 47331

Filed Feb. 4, 1981, Ser. No. 231,374

Int. Cl.³ A61G *17/00*

U.S. Cl. 27—12 **19 Claims**



1. A body support frame for a casket comprising:

(a) two longitudinal side frame members, said side frame members each including a generally "N" shaped rail of cold rolled steel,

(b) transverse support members, including transverse head frame and foot frame members, said transverse support members connecting said longitudinal side frame members at said vertical sections of said "N" shaped rails, and

(c) spring suspension means, said spring suspension means extending between said transverse head frame and said foot frame members.

4,332,065

THREAD WINDING MACHINE

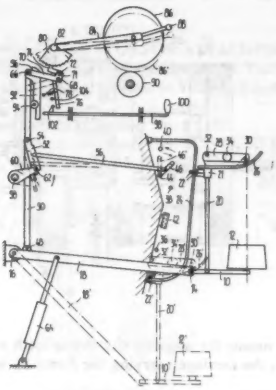
Tobias Hauri, Zug, Switzerland, assignor to Aktiengesellschaft Fr. Mettler's Söhne Maschinenfabrik, Arth, Switzerland

Filed Sep. 15, 1980, Ser. No. 187,625

Claims priority, application Switzerland, Sep. 28, 1979, 8778/79

Int. Cl.³ D02J *3/16*; B65H *63/02*

U.S. Cl. 28—225 **14 Claims**



1. A thread winding machine comprising:

a winding bobbin;

drive means for driving said winding bobbin;

a feed bobbin for supplying thread to said winding bobbin;

a moveable carrier for supporting said feed bobbin;

means for moveably mounting said carrier;

means defining a thread path between said feed bobbin and said winding bobbin;

means for monitoring the passage of the thread along the thread path;

said thread monitoring means serving for disconnecting the drive means from the winding bobbin in the event of thread breakage; and

means responsive to the action of said thread monitoring means for moving the feed bobbin carrier towards the winding bobbin upon occurrence of thread breakage.

4,332,066

COMPLIANCE MECHANISM

Samuel I. Hailey, Fort Worth, and George M. Kaler, Jr., Tarrant, both of Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Filed Jan. 7, 1980, Ser. No. 109,855

Int. Cl.³ B23B *39/14*

U.S. Cl. 29—26 R **1 Claim**

1. An apparatus for drilling holes in a workpiece using a self-feeding drill of the type that will simultaneously rotate and advance a drill bit from a retracted position to an extended position, the workpiece having a template secured to it that has guide holes, the apparatus comprising in combination:

an inner guide member having an axial aperture for rigidly carrying a drill for movement therewith, the inner guide member having an annular outer surface that is convex in cross-section;

an outer guide member having an annular inner surface that is concave in cross-section for slidingly receiving the outer surface of the inner guide member, the outer guide member having an annular outer surface, the outer guide member having a plurality of cavities in its inner surface;

a plurality of resilient disks secured to the outer surface of

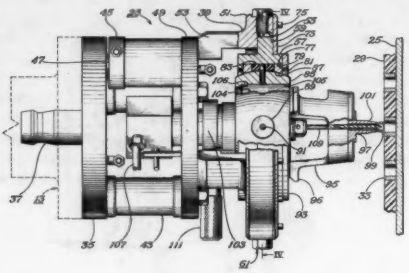
the inner guide member and dimensioned for close reception in the cavities;

a frame having an aperture for receiving and carrying the outer guide member;

a plurality of radially oriented and inwardly biased pins secured to the frame and bearing against the outer surface of the outer guide member;

a sleeve rigidly secured to the forward side of the inner guide member and adapted to receive the drill bit;

a carriage having connection means for securing to a control



arm means for aligning the sleeve with a selected guide hole, the carriage carrying the frame by a linear bearing; and

power means for selectively moving the frame forwardly with respect to the carriage to insert the sleeve into one of the guide holes, the disks allowing a limited amount of angular movement of the sleeve with respect to the carriage, and the pins allowing a limited amount of parallel movement of the sleeve with respect to the carriage to allow insertion even though the control arm means may have slidingly misaligned the sleeve.

4,332,067

PAINT ROLLERS

John W. Pearce, 413 Broadway SE., Warren, Ohio 44483

Filed Dec. 7, 1979, Ser. No. 101,230

Int. Cl.³ B05C *17/02*

U.S. Cl. 29—116 R **4 Claims**

1. For use with a paint roller having a cylindrical inner tube of rigid material and an exterior paint-absorbent cover about the exterior of said tube and fixed thereto, the improvement comprising a skeleton frame adapted to fit within said tube, including,

a rectilinear shaft,

a pair of cylindrical heads on said shaft, one head at one end of said shaft and another spaced inwardly of said shaft end an amount substantially equal to the length of said inner tube, at least one head having a pinned connection with said shaft for rotation therewith,

each head having an outside diameter of a size to closely and frictionally fit within said inner tube, said heads being formed of plastic material, such as polypropylene and the like, each of said heads being cup-shaped and said heads being disposed in facing relation, the cup shape of a head providing a skirt wall,

a plurality of rigid wires extending between said heads and a circular wire at each end of said plurality of wires and rigidly connected thereto to hold said wires in peripherally-spaced relation to form a wire cage, each circular wire being of a slightly larger diameter than the inside diameter of a respective skirt wall to frictionally fit within such wall, said wire cage maintaining said heads in spaced relation and connecting said heads so that both rotate with said shaft,

said shaft being adapted to be clamped in the chuck of an electric motor so that the skeleton frame and the paint roller may be rapidly rotated to expel paint from said cover by centrifugal action.

4,332,068

HEAT EXCHANGER ASSEMBLY

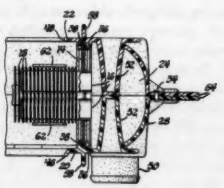
William Melnyk, Lathrup Village, Mich., assignor to McCord Corporation, Detroit, Mich.

Division of Ser. No. 970,483, Dec. 18, 1978, Pat. No. 4,300,628.

This application Jul. 14, 1980, Ser. No. 168,478

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.3 R **3 Claims**



1. A method of making a heat exchanger having a heat exchanging core with spaced headsheets with a tank associated with each headsheet including the steps of; disposing a first radiator component in engagement with a portion of the periphery of both of said headsheets, disposing a second radiator component in engagement with the remaining portion of the periphery of both of said headsheets and in engagement with said first radiator component to form a tank adjacent each of said headsheets and connecting said components together to form a fluid seal between said components and between said components and said one headsheet whereby fluid may flow between said tanks through said core.

4,332,069

MAKING HEAT EXCHANGERS

Richard W. Kritzer, 400 E. Randolph, Chicago, Ill. 60601

Filed Nov. 10, 1980, Ser. No. 205,795

Int. Cl.³ B21D *53/02;* **B23P** *15/26*

U.S. Cl. 29—157.3 A **8 Claims**

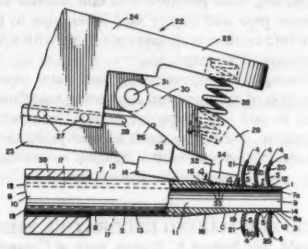
1. The method of forming fins on the surface of a heat exchange element wherein at least one face of each fin has a roughened surface thereon, which comprises the steps of,

(a) feeding an elongated tubular body member longitudinally past a cutter,

(b) reciprocating said cutter forwardly and rearwardly toward and away from the surface of said element at an acute angle and cutting into said surface during the forward movement thereof in a skiving action, thereby to

form an upstanding fin, one side of which is integral with said body, and

(c) forming a plurality of indentations in the surface of said body in the area from which the next succeeding fin is to



be cut, during the rearward movement of said cutter, whereby,

(d) when the cutter moves forwardly for the next cut, the cutter-remote face on the fin produced thereby will have a roughened surface.

4,332,070

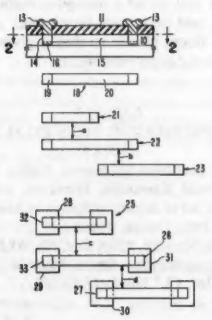
METHOD FOR FORMING A HEADLESS RESISTOR UTILIZING SELECTIVE DIFFUSION AND SPECIAL CONTACT FORMATION

Rajni Kant, San Jose, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Continuation of Ser. No. 71,804, Sep. 4, 1979, abandoned, which is a division of Ser. No. 914,637, Jun. 12, 1978, Pat. No. 4,191,964, which is a continuation of Ser. No. 760,593, Jan. 19, 1977, abandoned. This application Dec. 15, 1980, Ser. No. 216,401

Int. Cl.³ H01L *21/283, 21/38*

U.S. Cl. 29—578 **2 Claims**



1. A method for forming a resistor in a semiconductor body, said semiconductor body having an impurity concentration of less than 10^{17} ohms per cubic centimeter and said semiconductor body including a resistor diffusion formed adjacent a surface of said body on which an overlying insulator has been formed, said process comprising:

removing first and second non-adjacent portions of said insulation over said resistor diffusion;

introducing an impurity through said openings in said insulating layer to thereby form two contact diffusions in portions of the resistor diffusion, said contact diffusions being substantially coincident with the shape of said resistor diffusion and adjacent said body of semiconductor material at the locations at which each of the contacts is made, said contact diffusion of such concentration to form an ohmic contact to a Schottky contact forming material; and

forming ohmic contacts of a Schottky contact forming material for ohmically contacting each of said contact diffusions, said formation occuring at a temperature of less than 520° C., to thereby create a Schottky diode between any portion of said ohmic connections which is formed in contact with any portion of said semiconductor body.

4,332,071

METHOD OF AND APPARATUS FOR ATTACHING END STOPS TO SLIDE FASTENER STRINGER TAPES

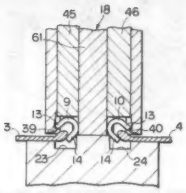
Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo, K.K., Tokyo, Japan

Filed Oct. 2, 1979, Ser. No. 81,117

Claims priority, application Japan, Oct. 5, 1978, 53-122961

Int. Cl.³ B21D *53/56;* **B23P** *19/04*

U.S. Cl. 29—408 **14 Claims**



1. A method of attaching a pair of U-shaped end stops each having a pair of clinching legs to the respective longitudinal marginal edge portions of a pair of slide fastener stringer tapes, said method comprising the steps of:

(a) intermittently advancing the slide fastener stringer tapes lengthwise along a path of travel;

(b) delivering end stops toward the stringer tapes individually in a direction substantially normal to said path of travel with the end stop legs directed toward said path of travel;

(c) stopping the individual end stops short of said stringer tapes and retaining one of the legs of each end stop as an axis for rotation of the end stop;

(d) turning the individual end stops about one of its legs so as to place the legs of each end stop one over and the other below the longitudinal marginal edge portion of the stringer tape with spaces left between both the legs and the longitudinal marginal edge portion; and

(e) clinching the legs about the longitudinal marginal edge portions while the stringer tapes are at rest.

4,332,072

METHOD AND DEVICE FOR SPACING CONTINUOUSLY MANUFACTURED ZIP FASTENERS IN WHICH THE CONNECTION ELEMENTS ARE CONSTITUTED BY A MONOFILAMENT OF MEANDER OR SPIRAL FORM

Giuseppe Isella, San Damiano, Italy, assignor to Brevetti Motta s.a.s, Milan, Italy

Filed Feb. 21, 1980, Ser. No. 123,430

Claims priority, application Italy, Feb. 27, 1979, 20593 A/79

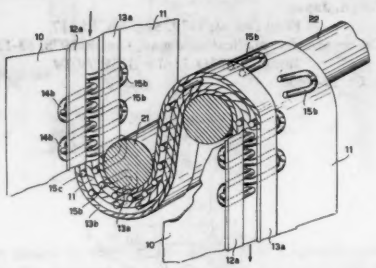
Int. Cl.³ B29D *5/00;* **A41H** *37/06;* **B23P** *19/04*

U.S. Cl. 29—408 **11 Claims**

1. A method for spacing continuously manufactured zip fasteners in which the connection elements are constituted by a monofilament of meander or spiral form rigid with the edges of support tapes, comprising removing the central part of the connection elements of the two continuous coupled tapes by cutting over the required spacing length, and then removing the open lateral loops of the meanders or spirals by longitudinally passing under tension that zone of the coupled tapes in

extended form from which the central part of the connection elements has previously been removed, over at least one deviation member in such a manner that the tapes partly wrap around said deviation member with the result that the open lateral loops are urged laterally outwardly and are expelled from the tapes, said tension being of such a magnitude that material of the coupled tapes is the sole means for causing said loops to be expelled.

4. A device for spacing a zip fastener of the kind comprising two support tapes coupled together by connection elements in the form of monofilaments of meander or spiral form rigid with the edges of the support tapes, said device comprising a blade-shaped punch for removing the central part of the connection



elements, and means for removing the open lateral loops, said means including at least one deviation member of length at least equal to the total width of the two support tapes coupled by the relative connection elements, guide means for the coupled tapes to keep them in contact with part of the surface of the deviation member, said traction means acting on the coupled tapes to make them move longitudinally under tension in contact with said part of the surface of the deviation member so that the tapes partly wrap around the deviation member with the result that the open lateral loops are expelled laterally from the tapes, said traction means applying said tension at such a magnitude that the material of the coupled tapes is the sole means for causing the loops to be expelled.

4,332,073

METHOD OF PRODUCING MULTIPLE-WALL COMPOSITE PIPES

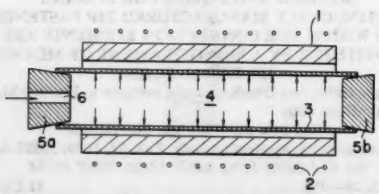
Toshio Yoshida, and Shigetomo Matsui, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 25, 1980, Ser. No. 124,215

Claims priority, application Japan, Feb. 28, 1979, 54-23075; Feb. 28, 1979, 54-23076; Feb. 28, 1979, 54-23077

Int. Cl.³ B23P *17/00*

U.S. Cl. 29—421 R **8 Claims**



1. A method of producing a multiple walled composite metal pipe, said pipe being formed of an outer pipe and an inner pipe inserted therein, said respective pipes being initially disposed in radially spaced apart relationship to establish a clearance therebetween, including the steps of:

(a) heating said outer pipe to an average temperature in excess of that of said inner pipe to establish a temperature differential between the pipes, while maintaining said clearance which causes a small coefficient of heat transfer between the pipes, to thermally expand the outer pipe thereby to increase the clearance;

(b) introducing fluid pressure into said interior surfaces of said inner pipe and urging said inner pipe to plastically expand into contact with said outer pipe with a designated temperature differential; and

(c) decreasing the temperature of said outer pipe to cause contraction of the same and decreasing said fluid pressure applied to said inner pipe for urging the inner pipe into compression, permitting each of said pipes to be joined into a composite pipe with a tight fit.

4,332,074

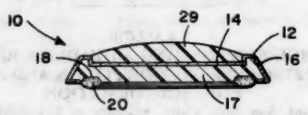
METHOD FOR MAKING DECORATIVE EMBLEMS

David L. Auld, and Robert E. Waugh, both of Columbus, Ohio, assignors to The D. L. Auld Company, Columbus, Ohio

Division of Ser. No. 968,280, Dec. 11, 1978, abandoned. This application Jun. 12, 1980, Ser. No. 158,956

Int. Cl.³ B29D *11/00*

U.S. Cl. 29—527.4 **4 Claims**



1. A method for producing decorative emblems comprising:

(a) printing a decorative design on the upper surface of a foil substrate,

(b) forming said foil substrate into an emblem shape with an integral bezel peripherally around said decorative design,

(c) casting a fluent plastic material directly onto said upper surface of said foil so that it completely covers said decorative design and forms a meniscus-shaped lens cap contiguous with said peripheral bezel, and

(d) curing said fluent plastic so that it gives a lens effect to said decorative design beneath it.

4,332,075

METHOD OF PRODUCING THIN FILM TRANSISTOR ARRAY

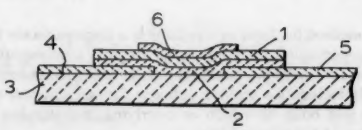
Isao Ota, Osaka; Haruhiro Shirazawa, Daito; Toshio Tatsumichi, Ando; Hiroshi Kawarada, Hirakata, and Tetsuro Ohtsuka, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 22, 1979, Ser. No. 41,507

Claims priority, application Japan, May 26, 1978, 53-63598

Int. Cl.³ H01L *21/04, 21/12*

U.S. Cl. 29—571 **10 Claims**



1. A method producing a thin film transistor comprising: uniformly forming a first electrode layer over an insulating substrate; forming electrodes for at least one of source, drain, and interconnecting lines with desired patterns by photoetching said first electrode layer; forming a uniform semiconducting layer on a surface of the substrate having said patterned electrodes; successively forming a uniform insulating layer over said uniform semiconducting layer; photoetching said

uniform insulating layer into a desired pattern; photoetching said uniform semiconducting layer into the same pattern as said patterned insulating layer; forming a second electrode uniformly over the surface having said patterned electrode and insulating layer; and photoetching said uniformly deposited second electrode into a desired pattern.

4,332,076

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

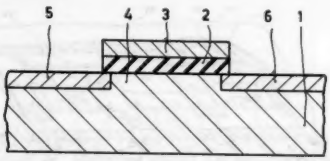
Jose Solo de Zaldivar, Wädenswill, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 943,234, Sep. 18, 1978, abandoned. This application Aug. 15, 1980, Ser. No. 178,644

Claims priority, application Netherlands, Sep. 29, 1977, 7710635

Int. Cl.³ H01L *21/225*

U.S. Cl. 29—571 **4 Claims**



1. A method of manufacturing a boron-doped polysilicon gate semiconductor device having a silicon body and at least one insulated gate field effect transistor having a source region, of drain region and a channel region in the body, which comprises:

forming a silicon dioxide gate insulation layer on said silicon body;

depositing a polysilicon gate electrode layer on said silicon dioxide gate insulation layer and over said channel region in a low-pressure process;

forming a boron source of substantially uniform thickness and reproducible boron concentration in the polysilicon gate electrode layer by boron doping the electrode layer by ion implantation; and

then accurately controlling the threshold voltage of the device by subjecting the device to a thermal treatment in an atmosphere containing hydrogen to indiffuse the boron from the electrode layer, through the gate insulation layer and into the channel region of the field effect transistor underlying the electrode layer.

4,332,077

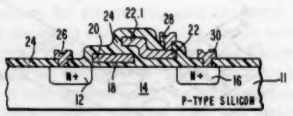
METHOD OF MAKING ELECTRICALLY PROGRAMMABLE CONTROL GATE INJECTED FLOATING GATE SOLID STATE MEMORY TRANSISTOR

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 65,436, Aug. 10, 1979, Pat. No. 4,297,719. This application Jul. 16, 1981, Ser. No. 284,106

Int. Cl.³ H01L *21/26*

U.S. Cl. 29—571 **6 Claims**



1. A method of forming a non-volatile memory structure comprising the steps of:

forming a first layer of insulating material on a surface of a body of semiconductor material of a first conductivity type;

forming a polycrystalline silicon floating gate member over the layer of insulating material, the floating gate member having a leading edge and a trailing edge, the region of the body of semiconductor material underlying the floating gate member representing the channel region;

forming a second layer of insulating material over the floating gate member;

forming a polycrystalline silicon control gate member having a leading edge and a trailing edge over the second layer of insulating material, the trailing edge thereof overlapping a portion of the leading edge of the floating gate member;

forming source and drain regions of an opposite conductivity type in the body of semiconductor material with the trailing edge of the floating gate member aligned with the junction of the source and channel regions and the leading edge of the control gate member aligned with the junction of the drain and channel regions.

4,332,078

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

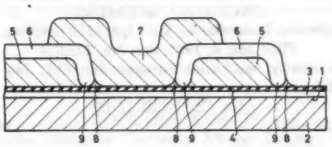
Hermanus L. Peek, Eindhoven, Netherlands, and Marnix G. Collet, Sunnyvale, Calif., assignors to U.S. Philips Corporation, Tarrytown, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,101

Claims priority, application Netherlands, Oct. 8, 1979, 7907434

Int. Cl.³ H01L *21/28*

U.S. Cl. 29—580 **10 Claims**



1. A method of manufacturing a semiconductor device in which a surface of a semiconductor body is provided with a first insulating layer having a dielectric thickness which is homogeneous throughout the surface, on which a first conductor pattern of polycrystalline silicon is provided, on which first conductor pattern a second insulating layer is formed by oxidation of said pattern in such manner that the dielectric thickness of the first insulating layer remains approximately constant, after which a second conductor pattern is provided on and beside the second insulating layer, characterized in that insulating paths are formed between the formation of the second insulating layer and the provision of the second conductor pattern while avoiding an alignment step and while using successive deposition and etching steps, which paths fill substantially only spaces below edges of the second insulating layer, during which deposition step a temporary layer is deposited to a thickness exceeding half the height of the space and during which etching step the temporary layer is removed from the second insulating layer.

4,332,079

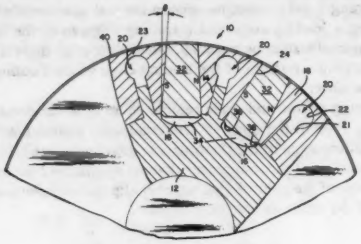
METHOD OF MAKING ROTOR RECTANGULARLY SHAPED TONGUES

Alexander Silver, Tarzana, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 973,344, Dec. 26, 1978, Pat. No. 4,260,921. This application Apr. 7, 1980, Ser. No. 138,017

Int. Cl.³ H02K *15/02*

U.S. Cl. 29—598 **3 Claims**



1. A method of forming a rotor for a permanent magnet machine, comprising the steps of:

forming a rotor hub having a plurality of equally spaced, radially extending, elongated parallel sided tongues;

bonding an inwardly converging, wedge-shaped support member, having an elongated, inwardly disposed parallel sided slot, over each radially extending, elongated parallel sided tongue to form a plurality of outwardly converging, wedge-shaped slots therebetween;

inserting a plurality of wedge-shaped permanent magnets having outwardly converging sides, individual magnets disposed in individual outwardly converging wedge-shaped slots between support members; and

rotating the rotor to wedge the outwardly converging permanent magnets into the outwardly converging slots to compress the sides of the support member slots on the tongues.

4,332,080

METHOD OF PRODUCING A HEATER OR HEAT EXCHANGE ELEMENT

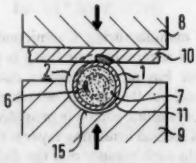
Ingo Bleckmann, Ignaz-Rieder-Kai 11, A-5020 Salzburg, Austria

Filed Jan. 6, 1981, Ser. No. 223,014

Claims priority, application European Pat. Off., Jan. 8, 1980, 80100081.1

Int. Cl.³ B23K *21/00*

U.S. Cl. 29—611 **14 Claims**



1. A method of producing an assembly comprising a pipe adapted to perform a thermal function and a support means to which the pipe is secured for transfer of heat therebetween, wherein wire is wound in a pre-stressed condition and in a coil configuration around the pipe, whereby the turns of the wire coil form projections on the surface of the pipe, the hardness of the material forming the pipe being greater than the hardness of the material forming the wire; wherein the resulting assembly of pipe and wire coil is pressed on to the support means, the hardness of the material of the support means being less than that of the material of the pipe and the material of the wire, the pressing force being adapted to the hardness of the material of the support means whereby said projections are caused to penetrate into the support means and material of the support means flows around said projections thereby anchoring the assembly of pipe and coil to the support means; and wherein, at a location remote from the support means relative to the pipe, the wire is at least partially flattened in cross-section so that the edges of portions of wire which are thus flattened come at least substantially into contact with each other.

4,332,081

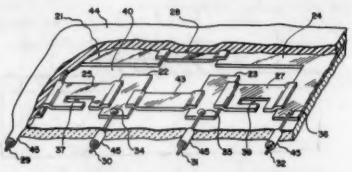
TEMPERATURE SENSOR

Gaylord L. Francis, Califon, N.J., assignor to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 917,977, Jun. 22, 1978, abandoned. This application Jul. 10, 1980, Ser. No. 168,842

Int. Cl.³ H01C *7/02*

U.S. Cl. 29—612 **1 Claim**



1. A method of adjusting the resistance of a temperature sensor comprising:

printing a plurality of first resistive material films, at least one second resistive material film forming a thermistor and a plurality of conductive termination films on the surface of a non-conductive substrate in a partially overlapping pattern to provide an electrical network;

firing said substrate to bond said films to said substrate and fix their properties;

immersing said substrate having said fired, formed films in a liquid bath maintained at a precise temperature, said temperature being the exact temperature at which said temperature sensor is to be responsive;

measuring the resistance through each of said resistive films while said films are in said bath;

removing said substrate from said bath;

trimming the resistance of at least one of said first resistive films to a precise resistance value.

4,332,082

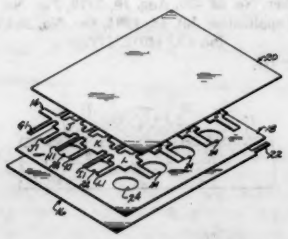
KEYBOARD APPARATUS AND METHOD FOR MAKING SAME

Larry K. Johnson, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 3, 1979, Ser. No. 99,440

Int. Cl.³ H01R *9/00*

U.S. Cl. 29—622 **7 Claims**



1. A method for assembling a keyboard comprising the steps

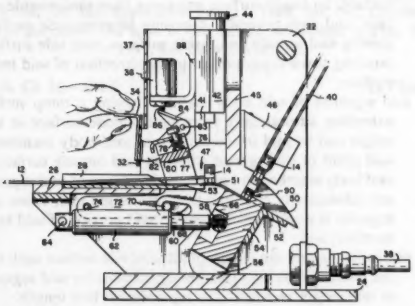
of providing first and second strips of electrically conductive material, and a strip of electrically insulative material, delineating a plurality of switching areas on one of the conductive strips, removing material from the said one conductive strip leaving the switching areas and a plurality of conductive paths emanating from each switching area, the conductive paths connecting the switching areas to each other and to provide output leads, forming a plurality of apertures in the insulative layer, the apertures being spaced so that each aperture can be aligned with a respective switching area, forming the other strip of conductive material into a selected circuit configuration and disposing the insulative strip between the first and second strips and laminating the strips together with the switching areas and the conductive paths lying in the same plane and with the apertures in the insulative strip aligned with the switching areas on said one conductive strip.

4,332,083

TERMINATING APPARATUS FOR FLAT CABLE

Keith Johnson, Jr., Manheim; Robert A. Long, Harrisburg, and William R. Over, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 15, 1980, Ser. No. 150,372
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—749 **3 Claims**



1. An apparatus for terminating flat multi-conductor cable to a connector having a cover partially assembled to a housing preloaded with terminals comprises

a terminating station where said cable is inserted between said cover and said housing and said cover is fully assembled to said housing by press means operative at said terminating station to fully assemble said cover to said housing,

a delivery station where connectors are received from a magazine,

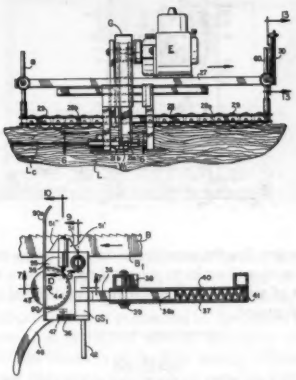
transport means for transporting said connector from said delivery station to said terminating station from a direction opposite that of cable insertion, said transport means comprising an escapement which reciprocates transversely of said magazine, said escapement being profiled to receive a single connector from said magazine, said escapement reciprocating between said delivery station and said terminating station, said transport means further having impounding means which prevent a connector from discharging from the magazine except when said escapement is at said delivery station.

4,332,084

PORTABLE BOARD MILL

Joseph R. Lovas, East Stroudsburg, Pa.; Paul J. Lovas, Blairstown, N.J., and Carl F. Koelmel, East Stroudsburg, Pa., assignors to Cyloflex, Inc., East Stroudsburg, Pa.

Division of Ser. No. 94,433, Nov. 15, 1979, Pat. No. 4,276,693.
This application Mar. 18, 1981, Ser. No. 245,038
Int. Cl.³ B27B *15/02*
U.S. Cl. 30—380 **4 Claims**



1. In a portable mill for cutting lumber from a log, including a frame adapted to be disposed transverse to the log, a pair of wheels mounted for rotation in a vertical plane in said frame, a band saw blade trained around said wheels, means for rotating at least one of said wheels to cause the blade to form a cut in the log, and a carriage carried by said frame to afford movement of the frame along the log as the blade advances to cut the log lengthwise, the improvement comprising: guide means carried by said frame on the trailing side of said cutting blade for slidably receiving the blade on opposite sides of the zone of cutting of the blade, means mounting said guide means for movement along the blade toward and away from the log, and means biasing said guide means into engagement with the sides of the log, whereby the guide means advances closely along opposite sides of the log to guide the blade in the zone of cutting.

4,332,085

ROPE HELIX GAGE

John Jacko, Hamilton Township, Mercer County, N.J., and William F. Stack, Middletown Township, Bucks County, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jul. 10, 1980, Ser. No. 168,229
Int. Cl.³ G01B *5/02*
U.S. Cl. 33—143 R **12 Claims**

1. Apparatus for determining the helix height of a length of a helically wound member having a plurality of longitudinally spaced crowns comprising:

(a) an elongated seat for receiving the material to be gaged;

(b) a movable beam superposed above said seat in substantial parallel relation thereto;

(c) longitudinally adjustable sensor assemblies adapted to contact each of the respective crowns slidably attached to said beam;

(d) a scale fixed with respect to said seat;

(e) means for parallelly moving said beam with respect to said seat for placing said sensor assemblies in engagement with each of the respective crowns including:

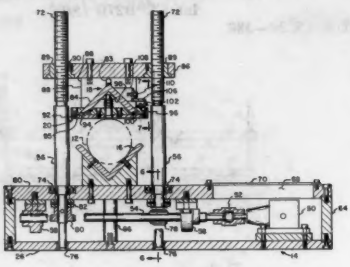
(i) support means attaching said beam adjacent opposite ends thereof;

(ii) internally threaded nut means in said support;

(iii) externally threaded lift screws engaging the respective of said nut means; and

(iv) means for rotatably driving said lift screws;

(f) independently actuable signal means on each of said sensor assemblies for indicating contact of the associated assembly with the adjacent crown; and



(g) an index fixedly connected to said beam in operative relation to said scale to permit direct readout of the helix height of said member when all of said signal means have been actuated.

4,332,086

CATALYST BED LEVEL MEASURING DEVICE

Gary L. Chapman, Port Arthur, and William H. Cummins, Nederland, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,106
Int. Cl.³ G01F *23/04*
U.S. Cl. 33—126.5 **6 Claims**

1. Catalyst bed level measuring device for use in a reactor or the like, comprising

an angled tubular member comprising a pair of segments joined at one end of each and adapted for insertion at the top of said reactor,

a line extending through both said segments of said tubular member and having a free end,

a weight attached to said free end of said line,

means for winding said line to adjust the vertical position of said weight relative to said tubular member,

said winding means being mounted adjacent to a free end of one of said segments,

one of said segments having a predetermined length less than the height of said reactor top above the maximum level of said catalyst bed,

the other of said segments having a shorter predetermined length,

a transverse member adjacent to the free end of said shorter segment, and

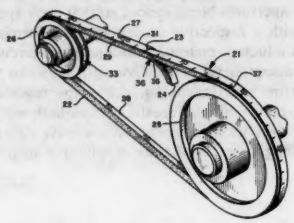
said shorter segment having a length such that when said transverse member is horizontal the free end of said one segment has a vertical displacement equal to the length of said one segment.

4,332,087

V-BELT MEASURING DEVICE

John T. Ellis, Chicago, Ill., assignor to Illinois Tube Company, Skokie, Ill.

Filed Jun. 23, 1980, Ser. No. 161,677
Int. Cl.³ G01B *3/02*
U.S. Cl. 33—137 R **2 Claims**



1. A V-belt measurement device for accurately determining the length required for a replacement belt for a belt-drive system, comprising:

a flexible elongated body member having an origin end and a termination end, said body member having sufficient flexibility and length for winding about said system with a segment of said body member between said origin end and a point of divergence along said body member overlapping a portion of said body member;

said body member having a generally truncated V-shaped cross-section substantially corresponding to the cross-section of the replacement belt, and including an outside surface, an inside surface narrower than said outside surface, and two generally opposing tapering side surfaces joining said outside and inside surfaces, said side surfaces tapering toward each other in the direction of said inside surface;

said segment of said body member having a ramp surface extending substantially from said outside surface at said origin end to said inside surface of said body member at said point of divergence whereby said outside surface of said body member and said outside surface of said segment are substantially contiguous at said origin end, when said segment is positioned to overlap said portion of said body member; and

size indicia along the length of said outside surface such that the point of overlap of said body member by said segment at said origin end indicates replacement belt length.

4,332,088

STUD LOCATER

Joel V. Cowman, 475 E. Lakeshore Dr., Sunrise Beach, Tex. 78643

Filed Nov. 17, 1980, Ser. No. 207,715
Int. Cl.³ G01B *5/18*
U.S. Cl. 33—169 R **9 Claims**

1. An apparatus for measuring and displaying the distance between a concealed structural member and a hole through a planar panel adjacent to and concealing the structural member, comprising

a surface plate having an opening therethrough alignable with the hole when said plate is placed against the panel;

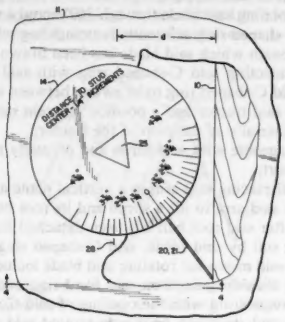
an elongated, generally L-shaped probe member having one leg of fixed length significantly longer than the other leg and a diameter smaller than the hole,

said longer leg being insertable through said opening in said surface plate and through the hole and being turnable until the shorter leg is substantially coaxial with the hole and said longer leg is generally parallel with the panel;

means attached to the distal end of said shorter leg for per-

mitting manipulation of said probe member from the front of said plate;

indicia on said surface plate for indicating the amount of angular sweep of said longer leg while said longer leg



remains generally parallel with the panel from a starting position to a position in which the distal end of said longer leg contacts said structural member; and

index means on said probe member for rotationally orienting said probe member relative to said indicia.

4,332,089

VARIABLE INDEXING PEGS

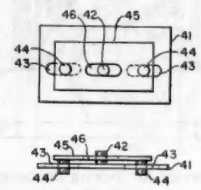
LeRoy M. Denning, 5925 Creekview Dr., Clarence Center, N.Y. 14032

Continuation-in-part of Ser. No. 888,465, Jun. 21, 1977, Pat. No. 4,188,728. This application Feb. 15, 1980, Ser. No. 121,986

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.³ B41B *1/00*

U.S. Cl. 33—184.5 **12 Claims**



1. A method for accurately and variably positioning an indexing carrier pin in an indexing peg for indexed registering devices comprising forming a variable indexing peg having an anchor registering pin plate with anchor registering pins thereon corresponding in size, shape and distance therebetween to selected holes of an indexed registering device, providing a means for attachment of an indexing carrier pin at variable positions along the length of said plate and attaching said carrier pin at a point along the length of said plate.

4,332,090

DIRECTIONAL TWO AXIS OPTICAL INCLINOMETER

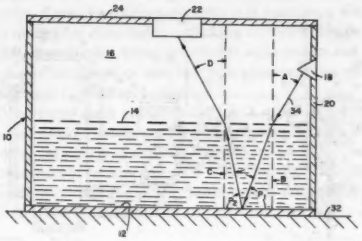
Escar L. Bailey, Athens, and Clifford G. Walker, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 7, 1980, Ser. No. 119,275

Int. Cl.³ G01C *9/06*

U.S. Cl. 33—366 **3 Claims**

1. A directional two-axis optical inclinometer comprising a container having a top cover mounted at the top thereof and a transparent liquid therein, a bottom of said container having a reflective surface, a collimated light source mounted on said container above the level of said liquid in said container and directing collimated light toward the surface of said liquid and to said reflective surface, said light entering and leaving said liquid at a variable angle with respect to the surface of said liquid in response to the tilt of said container, said container having a transparent gas medium over said liquid, and a solid



state quadrant type detector mounted on said top cover and adapted for receiving reflected light reflected off said reflective surface from said light source and producing output signals, a read-out indicator connected to the output signals from said detector and providing readout indication which is proportional to the intensity of the light energy reflected onto the detector and indicating the tilt angle and the direction of the tilt of the container.

4,332,091

MICROWAVE DRYING DEVICE FOR DRYING PRODUCTS IN FORM OF GRAINS

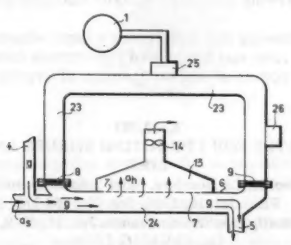
Andre Bensussan, and Guy Azam, both of Buc, France, assignors to C. G. R. MeV, Buc, France

Filed Jun. 4, 1980, Ser. No. 156,465

Claims priority, application France, Jun. 8, 1979, 79 14723

Int. Cl.³ F26B *23/08*

U.S. Cl. 34—1 **8 Claims**

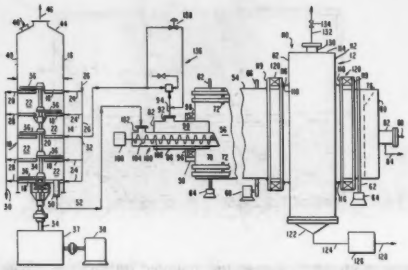


1. A microwave drying device for drying products in the form of grains, comprising a microwave source, at least one waveguide coupled electromagnetically to the microwave source, means for injecting into this waveguide the product to be treated, means for driving this product in the waveguide, means for causing a forced circulation of dry air in the waveguide, means for discharging the air charged with the humidity given up by the product to be treated, and means for collecting the dried product in this waveguide, wherein the waveguide is closed on itself so as to form a ring, and coupled to said source by directional coupler for injecting radiation so as to cause recirculation in one direction around said closed loop, a part of this waveguide forming a channel through the product to be treated may pass, said channel being connected at its ends to pipes for feeding thereinto and removing therefrom the product, these pipes forming cut-off waveguides.

4,332,092
PROCESS AND APPARATUS FOR DESOLVENTIZING AND DRYING SOLVENT WET MATERIALS

Roger J. Hansotte, Butler, Pa., assignor to Dravco Corporation, Butler, Pa.

Filed Sep. 24, 1980, Ser. No. 190,428
Int. Cl.[3] F26B *3/14*
U.S. Cl. 34—27 11 Claims



1. A process for desolventizing a solvent extracted material to improved solvent recovery which comprises:

(a) introducing said material into desolventizer zone maintained at a desolventizing temperature;

(b) introducing a vapor stream including steam and solvent vapors into said desolventizer zone for direct contact with said material to effect desolventizing of said material with concomitant increase in the moisture content thereof;

(c) withdrawing a vapor including vaporized solvent from said desolventizer zone;

(d) withdrawing desolventized material from said desolventizer zone;

(e) introducing said desolventized material into a drying zone for heating said desolventized material in the absence of air to a temperature sufficient to reduce the moisture and solvent content thereof;

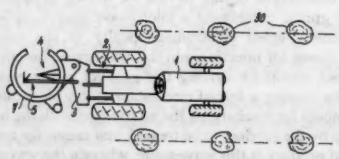
(f) withdrawing dried solid material from said drying zone; and

(g) withdrawing and compressing a vapor stream from said drying zone, said compressed vapor stream constituting at least a portion of said vapor stream of step (b).

4,332,093
APPARATUS FOR UPROOTING SHRUBS AND THE LIKE

Pierre Berthollet, La Bouviere, Saint Sulpice (Savoie), France

Filed Jul. 10, 1980, Ser. No. 168,273
Claims priority, application France, Jul. 11, 1979, 79 18511
Int. Cl.[3] A01G *23/06*
U.S. Cl. 37—2 R 4 Claims



1. An apparatus for uprooting shrubs or the like with an intact root ball, comprising:

a support;

a tractor provided with hitch means for raising and lowering said support and for advancing said support horizontally;

a C-shaped ring mounted on said support and not rotatable about its axis;

a blade mounted on said C-shaped ring and adapted to be drawn beneath a shrub by the lowering and horizontal displacement of said support;

means for rotating said blade through 360° about a vertical axis of said C-shaped ring substantially coinciding with that of a shrub beneath which said blade has been drawn;

a pivot connecting said C-shaped ring with said support to enable said C-shaped ring to be swung between a position in line with said tractor and a position wherein said C-shaped ring lies laterally of the path of the tractor;

an arm engageable with said shrub and pivotally mounted on said support;

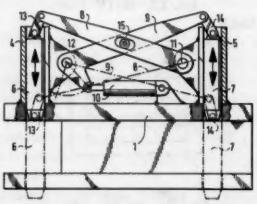
means for displacing said arm in a vertical plane and laterally to enable said arm to lift a shrub and its root ball from the ground after said root ball has been detached from the surrounding soil by said blade, said C-shaped ring having an opening, said means for rotating said blade including a movable ring slidably guided on said fixed ring and having an opening registering with the opening of said C-shaped ring whereby said rings can be drawn around said shrub upon horizontal movement of said support; and

cylinder means for swinging said rings between said positions.

4,332,094
HYDRAULIC LOCKING OF THE BOOM TO THE SWIVEL ARM OF AN EXCAVATOR, CRANE OR THE LIKE

Rolf Mieger, Heimstrasse 7, 7951 Kirchdorf, Iller, Fed. Rep. of Germany

Filed Dec. 31, 1979, Ser. No. 108,658
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1979, 2901923
Int. Cl.[3] E02F *5/02*
U.S. Cl. 37—103 11 Claims



1. A hydraulic device for locking the boom to the swivel arm of an excavator, crane or the like by means of locking pins, characterized in that two non-coaxial locking pins (6 and 7) can be guided transversely through the swivel arm (1) and boom by two levers (8 or 9) which are pivoted to the pins and are drivable by a hydraulic cylinder (10), the hydraulic cylinder (10) being hinged to one of the levers (8) by its piston and to the other lever (9) by its piston rod.

4,332,095
PICTURE HOLDER

Oliver M. Tanney, Englewood, N.J., assignor to Goodren Products Corp., Englewood, N.J.

Filed Apr. 28, 1980, Ser. No. 144,262
Int. Cl.[3] G09F *1/12*
U.S. Cl. 40—158 R 1 Claim

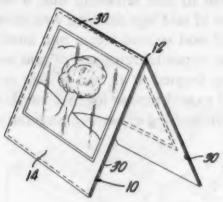
1. A holder for photographs and the like, comprising,

a sheet of transparent material adapted to be folded along a transverse line to retain a permanent crease, said transparent material being of sufficient rigidity to enable said sheet, when folded, to stand upright in an inverted —V— position, with edges remote from the fold forming the bottom edges of the upright holder,

an opaque layer on one surface of said sheet, said layer

extending on both sides of said transverse fold line and having at least one opening therein,

means for mounting a photograph or the like against one side of said sheet over said opening such that only the portion of photograph desired to be exposed to view would be visible from the other side of said sheet,



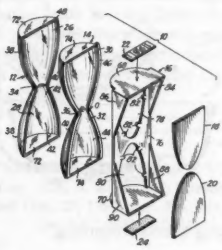
said mounting means comprising an adhesive on said sheet outside of said opening and limited to locations proximate a bottom edge, and a strip of sheet material normally covering said adhesive and adapted to be readily removed to expose said adhesive to enable the photograph to be secured to said sheet.

4,332,096

GRAVITY FLOW DISPLAY DEVICE

Michael Kohner, Parsippany, and Frank Kohner, Englewood, both of N.J., assignors to The Michael Kohner Corp., Parsippany, N.J.

Filed Jun. 1, 1981, Ser. No. 268,892
Int. Cl.³ G09F *19/00*
U.S. Cl. 40—486 **15 Claims**



1. A gravity flow display device comprising:

(A) a first transparent front hourglass-shaped portion with a forwardly convex front face that tapers widthwise to a first constricted waist and with a matching concave rear face, the portion thereby comprising two half-hourglass segments connected to one another by said first constricted waist;

(B) a second transparent rear hourglass-shaped portion substantially similar in shape to and slightly smaller than said front hourglass-shaped portion, said second portion also comprising two different half-hourglass segments connected to one another by a second constricted waist;

(C) means for attaching said first and said second portions such that said second portion nestingly fits into the rear of said first portion such that the front of the rear face of said second portion is positioned behind and spaced a small distance away from the front face of said first portion to create a thin space between said two attached portions;

(D) means to clip the top and bottom of said thin space;

(E) said first and said second hourglass portions when attached comprising two thin half-hourglass-shaped compartments connected by a constricted open passageway, each of said two compartments being configured to taper inwardly width-wise toward the constricted open passageway and each of said two compartments having a front face and a rear face;

(F) non-transparent flowable means in said space being capable of reversibly flowing from one thin half-hourglass compartment to the other thin half-hourglass compartment through the constricted open passageway in response to gravitational force, said flowable means being of a quantity sufficient only to almost completely fill whichever of said two compartments it is contained within;

(G) means for detachably attaching different displays, each different display being attachable adjacent to and in back of a different one of said two hourglass portions proximate the rear face of each; and

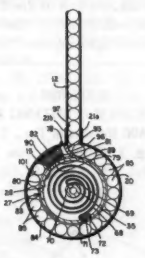
(H) whereby each attached display is made visible through one of said transparent hourglass compartments while the other attached display is visually blocked by said non-transparent means and vice versa by the alternate filling and emptying of said flowable means into and from said hourglass compartments.

4,332,097

DRUM MAGAZINE FOR AUTOMATIC PISTOL OR THE LIKE

William J. Taylor, Jr., 828 Sycamore Dr., Decatur, Ga. 30030

Filed Oct. 1, 1979, Ser. No. 80,709
Int. Cl.³ F41C *25/10*
U.S. Cl. 42—50 **9 Claims**



1. Drum magazine apparatus for supplying cartridges to a firearm, comprising:

means defining a cylindrical housing;

a rotor concentrically mounted within said housing to define an annular channel for receiving a plurality of cartridges;

extension means connected to said housing and defining a cartridge feeding channel in communication with said annular channel, said extension means being configured to fit within a magazine receptacle of a firearm so as to define a path of cartridge movement from said annular channel to the firearm;

guide means located adjacent the communication between said annular channel and said extension means to guide cartridges moving from said annular channel to said cartridge feeding channel;

a pair of covers disposed on respective ends of said cylindrical housing to enclose said housing;

said rotor having means defining an inwardly facing surface in proximate relation to said covers; and

each of said covers including means operative to slidingly fit within said inwardly facing surface of said rotor so as to position said rotor in predetermined location within said cylindrical housing.

4,332,098

ELECTRIC CONTROL WEAPON, OPERATION AND AMMUNITION THEREFOR

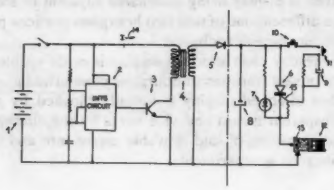
Serge Estenevy, Saint Just-Saint Rambert, France, assignor to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement, France

Filed Aug. 13, 1979, Ser. No. 66,057

Claims priority, application France, Aug. 11, 1978, 78 24227; Jun. 28, 1979, 79 17409

Int. Cl.[3] F41C *19/12;* F42B *5/08*

U.S. Cl. 42—84 29 Claims



1. An electrically controlled weapon having at least one barrel comprising:

a cartridge receivable in the barrel, said cartridge having a powder charge and a resistive element disposed proximate said powder charge;

generator means for generating a high voltage DC current;

at least one capacitor charged by said high voltage DC current;

an electronic switch connected between said capacitor and the resistive element of said cartridge; and

a mechanical switch for generating an electrical signal activating said electronic switch to discharge said at least one capacitor through said resistive element, volatilizing said resistive element and igniting said powder charge.

4,332,099

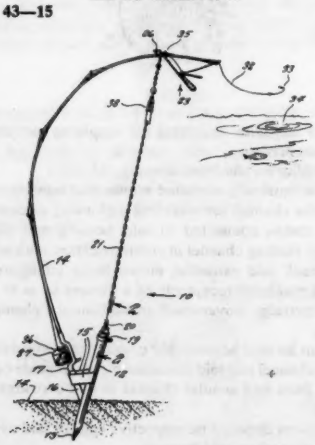
CAT CATCHER (FISHING DEVICE)

Enoch W. Morehead, 600 Robinson Ter., Texarkana, Tex. 75501

Filed Sep. 2, 1980, Ser. No. 183,082

Int. Cl.[3] A01K *91/06*

U.S. Cl. 43—15 1 Claim



1. A cat catcher fishing device, comprising, in combination, a tubular post, a lower end of said post being flattened for easy insertion into the ground, a holder for a fishing rod handle being angularly secured to a side of said post by means of braces therebetween, a plug-like core inserted in the top of said post, a hose-type clamp around said post securing said core inside said post, a tethering line secured at its one end to said core, and a triggering device attached to an opposite end of said tethering line; said triggering device comprising a stiff wire bent into a straight first leg and a straight second leg at right angles to each other, a loop on an outer end of said first leg for securement to said tethering line; a double U-shaped bend at a junction of said legs forming a relatively short extension and offset of said second leg; a one hundred and eighty degree bend at an opposite outer end of said second leg, and a short terminal leg formed at an end of said outer bend being generally parallel to said second leg, a terminal spur formed on an end of said terminal leg extending angularly therefrom.

4,332,100

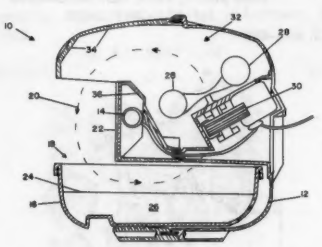
FLYING INSECT TRAP

William A. Schneider, Lancaster, Pa., assignor to Pestolite, Inc., Lancaster, Pa.

Continuation of Ser. No. 76,735, Sep. 18, 1979, abandoned. This application Jan. 28, 1981, Ser. No. 229,723

Int. Cl.[3] A01M *1/08*

U.S. Cl. 43—113 9 Claims



1. A trap for flying insects comprising:

a frame;

a radiation source of tubular cylindrical configuration mounted within and held by the frame in an orientation such that the axis of the radiation source is essentially horizontal;

air circulating means attached to and mounted within the frame and oriented so that all of the air flowing into it is moved across the surface of a liquid contained within a reservoir within the frame prior to entry into the air circulating means, to remove particulate matter from the air;

air flow directing means attached within the frame and shaped to direct an air flow generated by the air circulating means in a recirculating non-turbulent flow pattern within the frame and around the radiation source so that the flow pattern approximates a horizontal cylinder coaxial to the radiation source;

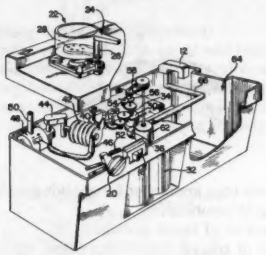
said reservoir having a dimension parallel to the axis of the radiation source which approximates the axial length of the radiation source, removably mounted within the frame so that the top of the reservoir is located in proximity to and tangent with the lowest portion of the air flow path; and

said liquid contained in the reservoir to trap insects diverted onto the liquid surface by the air flow generated by the air circulating means.

4,332,101
TOY KITCHEN ASSEMBLY

Tohru Tomita, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1981, Ser. No. 228,478
Claims priority, application Japan, Jan. 30, 1980, 55-10080
Int. Cl.³ A63H *33/28, 3/52*
U.S. Cl. 46—9 **22 Claims**



1. A toy stove assembly capable of simulating the cooking of food comprising:

a housing member configured to simulate a stove and a kitchen sink;

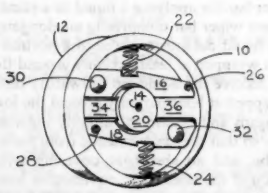
first means in the housing member to simulate at least one area for placing a cooking vessel, said first means including means for introducing pressurized air into the cooking vessel to simulate boiling of a liquid substance in the cooking vessel;

a member attached to the housing member and configured to simulate a faucet, and means in said housing for pumping a liquid such as water into the faucet simulating member wherefrom the liquid pours into the sink, the means for pumping also including means connected thereto in said housing for continuously circulating the liquid from the sink into the faucet.

4,332,102
SUPERIOR PERFORMANCE YO-YO

Michael S. Caffrey, 1801 S. Kevin Dr., Tucson, Ariz. 85710

Filed Oct. 27, 1980, Ser. No. 201,160
Int. Cl.³ A63H *27/12*
U.S. Cl. 46—61 **12 Claims**



1. A superior performance yo-yo exhibiting an increased spinning time for performing tricks comprising:

a first and second spaced apart opposed complimentary circular disks;

an axle attached at opposite ends to said spaced apart disks, said axle transverse to said disks at their centers;

a bearing means situated around said axle between said disks;

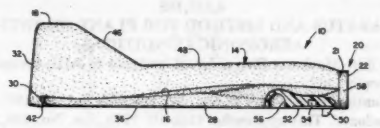
a clutch mechanism operably attached to said second of said spaced apart disks, said clutch mechanism adapted to act upon said bearing means; and

a string attached to said bearing means whereby when the yo-yo is thrown, it tends to spin about the bearing at the end of the string.

4,332,103
MODEL AIRCRAFT GLIDER

Leon Shulman, Metuchen, N.J., assignor to Life-Like Products, Inc., Baltimore, Md.

Filed Jun. 27, 1980, Ser. No. 163,426
Int. Cl.³ A63H *27/14*
U.S. Cl. 46—81 **14 Claims**

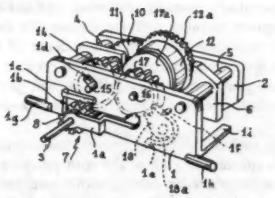


1. A model aircraft glider comprising a delta wing and a fuselage, the fuselage being centrally positioned on an upper surface of the wing and the fuselage and the wing being substantially of the same dimension longitudinally, the glider having a finger-receiving recess centrally located on its underside near the forward end of the fuselage, an impact-absorbing bumper attached to the forward end of the fuselage, the bumper having a substantially flat frontal portion, and having sides which extend beyond the forward end of the fuselage and the wing, the sides providing grasping surfaces, said surfaces and said recess being positioned sufficiently closely to each other to provide means for gripping the glider for hand launching.

4,332,104
CLOCKWORK MOTORS FOR TOY VEHICLES

Jean-Louis Ribas, Saint Priest, and Jean-Paul Raharinosy, Caluire, both of France, assignors to Societe Anonyme "Majorette", Caluire, France

Filed Jan. 30, 1980, Ser. No. 116,725
Int. Cl.³ A63H *17/00*
U.S. Cl. 46—206 **11 Claims**



1. A clockwork motor for driving a toy vehicle having axle supported drive wheels for rolling on a surface, comprising:

(a) a frame including a pair of spaced side members, the axle passing transversely therethrough and being journaled in a first one of said side members and resiliently supported in the second of said side members so that when the vehicle is pressed toward said surface the second end of the axle can be displaced upwardly in said second side member;

(b) first and second gears fixed on the axle;

(c) a casing journaled for rotation on a shaft extending between said side members, and a gear train connected between said first axle gear and said casing for transmitting rotational drive therebetween;

(d) a wind-up wheel having teeth therearound, the wheel being journaled on said shaft and having a hub entering said casing;

(e) a spiral spring in said casing and coupled at opposite ends respectively with said casing and with said hub of the wind-up wheel;

(f) means for limiting rotation of the wind-up wheel to dis-

placement in a direction which winds the spring tighter; and

(g) pinion means having pivots supported by the frame and shiftable toward and away from the wind-up wheel, the pinion means being engaged by the second axle gear when the vehicle is pressed toward the surface and being moved into engagement with the wind-up wheel teeth when the vehicle is rolled in the forward direction but retracted therefrom when the vehicle is rolled backward.

4,332,105

APPARATUS AND METHOD FOR PLANT GROWTH IN AEROPONIC CONDITIONS

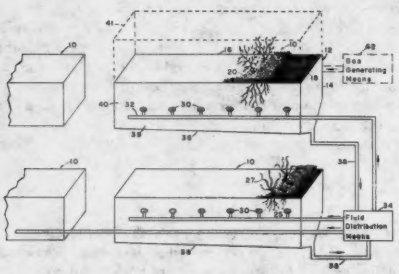
Isaac Nir, Mazkeret Batya, Israel, assignor to ADI-Aeroponics Growth Ltd.

Continuation-in-part of Ser. No. 814,980, Jul. 12, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 950,261

Claims priority, application Israel, Jul. 26, 1976, 50126; Oct. 10, 1977, 53084

Int. Cl.³ A01G *11/00, 27/00, 31/00*

U.S. Cl. 47—1 R **4 Claims**



1. Apparatus for growth and development of plants comprising: at least one plant development unit including:

an enclosure for enclosing the root portions of plants including substantially humidity retaining side and bottom walls;

a plant support member defining a generally flat top surface of said enclosure and including a layer of web material having apertures formed therein to receive plants above the root portions thereof without the provision of an intermediate element which surrounds a portion of the plant;

said plant support member being characterized in that it exposes substantially all of the root portions of the plants to the atmosphere contained within said enclosure;

nutrient spraying means for providing a nutrient mist enclosure, said nutrient comprising water and dissolved nitrogen and potassium fertilizers;

nutrient collection and recirculation means defined in part by a bottom surface of said enclosure;

control means for determining the timing of mist provision;

environmental sensor means for determining conditions affecting plant transpiration including temperature and humidity inside said enclosure;

means for heating said nutrient; and

control means for determining the timing of mist provision, said control means being responsive to the outputs of said environmental sensor means indicating temperature and humidity for maintaining a desired temperature and humidity within said enclosure;

wherein said spraying means comprises a centrally powered pneumatic system which draws liquid nutrient by venturi action; and

wherein the nutrient collection and recirculation means of each plant development unit is isolated from each other plant development unit.

4,332,106

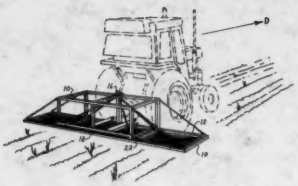
WET ROPE WEED KILLER

Joseph J. Barton, IV, and Bobby G. Boyd, both of Box 341, Hale Center, Tex. 79041

Filed Oct. 16, 1978, Ser. No. 951,448

Int. Cl.³ A01N *5/00*

U.S. Cl. 47—1.5 **10 Claims**



1. In a wet rope applicator for applying herbicides to weeds comprising in combination:

a. a reservoir of liquid herbicide,

b. a pair of spaced apart tubes below the reservoir fluidly connected to the reservoir,

c. support means for supporting the reservoir,

d. a loose woven synthetic rope having two ends with one end in one tube and the other end in the other tube,

e. so that liquid herbicide is pressure fed into each end of the rope.

4,332,107

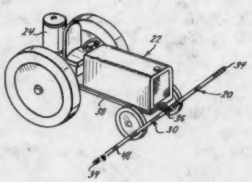
WIPER BAR SYSTEM

Roger W. Reed, Rte. 5, Hillsboro, Mo. 63050

Continuation-in-part of Ser. No. 83,603, Oct. 11, 1979, abandoned. This application Sep. 4, 1980, Ser. No. 184,125

Int. Cl.³ A01M *21/00*

U.S. Cl. 47—1.5 **16 Claims**



1. A wiper bar for applying a liquid to a stand of vegetation in a field, said wiper bar comprising an elongated tube, means for feeding liquid outwardly through a portion of the tube, a wick means wrapped at least partially around the a portion of the tube to receive the liquid fed outwardly through the tube, a shield wrapped at least partially around the lower portion of the wick means and positioned directly outwardly from said wick means so that the wick extends from between the shield and the tube, and an absorbent covering wrapped at least partially around the shield and covering at least a portion of the wick extending from between the shield and tube.

4,332,108

COLLAPSIBLE REVOLVING DOOR

Horst Appelmann, Pickering, Canada, assignor to C. J. Rush Limited, Scarborough, Canada

Filed Dec. 3, 1979, Ser. No. 99,809

Int. Cl.³ E05D *15/02*

U.S. Cl. 49—44 **11 Claims**

1. A collapsible revolving door comprising:

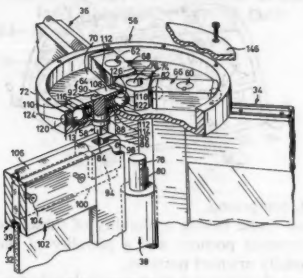
a plurality of door leaves normally extending radially outwardly from a generally vertical axis in angularly spaced positions;

upper and lower bearing means mounting the leaves in a doorway for rotation about said axis; and,

upper and lower latching mechanisms interposed between said leaves and the respective bearing means and adapted to normally maintain the leaves in said radial positions but to permit pivotal movement of each leaf about a generally vertical axis disposed adjacent the inner end of the leaf, between said normal radial position and a collapsed position in the event that the leaf is subjected to abnormal forces;

each said latching mechanism comprising:

a housing coupled to the relevant one of said bearing means for rotation about said axis; a plurality of coupling pins each coupling one of said leaves to said housing, each said pin being mounted to turn in the housing about the pivot axis of the associated leaf while being restrained against



movement laterally of said leaf pivot axis; a plurality of latch members disposed in said housing and each coupled to one of said coupling pins so that pivotal movement of the leaf between its normal radial position and said collapsed position causes concomitant pivotal movement of the associated latch member; each latch member being coupled at a position generally centrally of its length to the associated coupling pin whereby respective end portions of each latch member are defined on opposite sides of said pin and detent means acting between each said end portion of each latch member and the housing, said detent means being adapted to retain said latch members in said normal positions but to permit release of any latch member in the event that abnormally high forces are applied to the associated leaf so that the leaf can move to its collapsed position.

4,332,109

GRINDING APPARATUS FOR A FLANK OF AN END MILL POINT

Toshiaki Hosoi, 9-10-5, Kamiminami, Hirano-ku, Osaka, 546, Japan

PCT No. PCT/JP79/00198, § 371 Date Apr. 4, 1980, § 102(e) Date Jan. 16, 1980, PCT Pub. No. WO80/00323, PCT Pub. Date Mar. 6, 1980

PCT Filed Jul. 27, 1979, Ser. No. 196,045

Claims priority, application Japan, Aug. 4, 1978, 53/95753

Int. Cl.³ B24B *19/00*

U.S. Cl. 51—127 **1 Claim**

1. A grinding apparatus for a flank of an end mill point comprising:

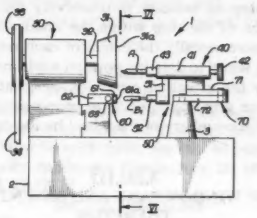
a grinding means having a grinding wheel which has a grinding face;

a model guide having a guide face flush with the grinding face of the grinding wheel and provided subjacent the grinding face of the grinding wheel;

a cutter support for supporting an end mill cutter horizontally in a support housing;

a model support for holding a model, said model support comprising a cylindrical arm hanging from the support housing of the cutter support at substantially the same height as the model guide such that an axial line of the model is located parallel with the axial line of the cutter and the model contacts with the model guide when the cutter contacts with the grind face of the grinding wheel;

a shift means for shifting the cutter support and the model support together toward the grinding wheel and for rotating the cutter and model support together through an angle substantially equal to 90° from a position substantially perpendicular to said grinding face to a position substantially parallel to said grinding face; and



a model is provided in said model support in a same positional relationship as said and mill cutter, said model comprising a cylindrical body having a spherical point hving a same outer peripheral surface as a rotary contour outline of a cutter to be ground in the required position and a groove provided on an outer periphery surface such that a model line is formed corresponding to the required cutting edge of the cutter.

4,332,110

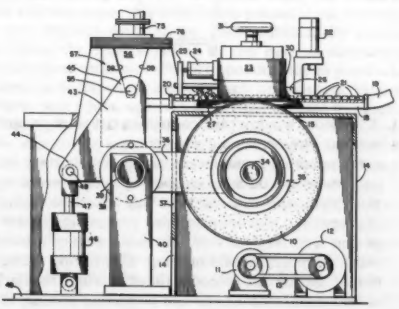
AUTOMATICALLY ADJUSTABLE GRINDING WHEEL

Donald E. Flinchbaugh, deceased, late of York, Pa. (by Anna M. Flinchbaugh, executrix), assignor to Weldon Hydraulics, Inc., York, Pa.

Filed May 5, 1980, Ser. No. 146,490

Int. Cl.³ B24B *49/00*

U.S. Cl. 51—165.78 **9 Claims**



1. In a grinding machine having workpiece retaining means, a rotatable grinding wheel, wheel support means for disposing the periphery of the grinding wheel in workpiece grinding position relative to the retaining means and grinding wheel dressing means, means for dressing the grinding wheel during operation of the grinding machine comprising

(a) a pivotal support having a distal end rotatably supporting the grinding wheel,

(b) actuating means connected to the support and operable to pivot the support to retract the grinding wheel to dressing position relative to the dressing means and to return the grinding wheel to workpiece grinding position,

(c) a cam disposed adjacent the pivotal support, said cam

having a V-shaped notch defined by a pair of opposing and converging cam surfaces,

(d) a stop affixed to the pivotal support for limiting both the extent to which the grinding wheel is retracted to dressing position and the extent of return of the grinding wheel to workpiece grinding position, said stop being oscillatable within the cam notch when the support is pivoted, the amplitude of oscillation of the stop being limited by the opposing cam surfaces, and

(e) cam actuating means connected to the cam and operable to adjust the location of the V-shaped cam notch relative to the stop to increase progressively the amplitude of oscillation of the stop within the notch and thereby increase incrementally the extent of each retraction of the grinding wheel to dressing position while increasing incrementally the extent of return of the grinding wheel to workpiece grinding position in proportion to the reduction of the periphery of the wheel by the dressing means.

4,332,111

FIREPROOF WINDOWPANE AND MOUNTING FRAME THEREFOR

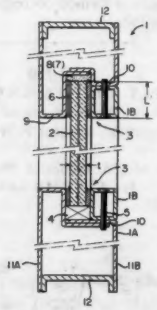
Kenzi Terashima, Nishinomiya, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Mar. 5, 1980, Ser. No. 127,520

Claims priority, application Japan, Mar. 9, 1979, 54-30082[U]; Mar. 10, 1979, 54-31158[U]

Int. Cl.³ E04H *9/00*; E06B *7/12*

U.S. Cl. 52—1 **7 Claims**



1. A fireproof windowpane containing structure comprising:

a metallic wire-containing glass plate;

a metal mounting frame means having a main body extending around and defining an opening to be covered by said glass plate, said main body having a surface facing into said opening, a groove defining projecting portion projecting from said surface into said opening around the entire periphery of said opening, an inwardly facing portion on said surface spaced in the direction of the thickness of said frame means from said projecting portion, at least the portion of said surface along the portion of said frame means which is to be at the top of the frame when the structure is in use having a recess therein between said projecting portion and said inwardly facing portion, and a groove defining member on said inwardly facing portion extending inwardly into said opening from said surface and having the inner end flush with the inner end of said projecting portion, said groove defining member, inwardly projecting portion and said recess defining a groove;

said glass plate being mounted in said frame means with the edges of said glass plate extending into said groove, at least the part of the edge of the glass plate which is to be at the top of the frame means when the structure is in use extending into said groove a distance at least 1.6 times the thickness of the glass plate; and

an incombustible filler material between at least the surfaces along the edge of the glass plate and the surfaces of said groove defining member and said projecting portion defining groove.

4,332,112

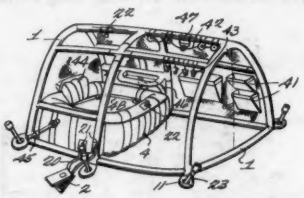
MULTIPURPOSE AIR FILLING TENT

Yun T. Hsu, 3rd Fl., No. 4, Nong 6, La. 906, Min Sheng E. Rd., Taipei, Taiwan

Filed Mar. 14, 1980, Ser. No. 130,339

Int. Cl.³ E04B *1/34*

U.S. Cl. 52—2 **3 Claims**



1. A tent, comprising:

an air-post frame having a plurality of substantially vertically oriented portions and a plurality of substantially horizontally oriented portions;

means for inflating and deflating said air-post frame;

a tent surface integrally formed with said air-post frame;

an air mattress bed integrally formed with said air-post frame and having an extended periphery and wave-shaped bottom for isolating a sleeping surface thereof from rain water;

a storage bag formed integrally with an interior portion of the tent surface;

a zipper-closure closet formed in an inner wall space of the interior of said tent surface including a garment rack rope hung on at least one horizontally oriented portion of said air-post superstructure;

a storage shelf integrally formed with said air-post frame;

a zipper-closure tent door formed in a portion of said tent surface; and

a canopy, integrally formed with said tent surface and said air-post frame, sheltering an area immediately outside said tent at said tent door.

4,332,113

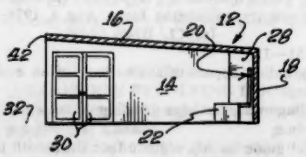
VIDEO ROOM

Leslie T. Moore, 22749 Happy Hollow Rd., Diamond Bar, Calif. 91765

Filed Feb. 29, 1980, Ser. No. 126,038

Int. Cl.³ E04H *3/22*

U.S. Cl. 52—6 **4 Claims**



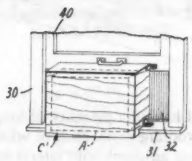
1. A video room addition structure comprising two vertically oriented side walls each tapering in elevation correspondingly, and placed such that they approach each other in horizontal separation as their elevation decreases; an end wall, of rectangular shape, vertically oriented, enclosing the narrow,

lowest elevation ends of the said side walls, and rigidly affixed to each of said side walls; a planar roof, supported by trusses spanning the area between the side walls; and an integrally combined large screen projection television system, such that the components thereof are built into the structure, with the viewing screen placed as part of the interior of the said end wall; the entire structure being constructed in place and rigidly affixed to an existing residential structure, with appropriate ingress and egress, and utilities interconnections provided as necessary.

4,332,114
COVER

Virgil E. Goebel, Hutchinson, and Raymond R. Dreier, Glencoe, both of Minn.

Continuation of Ser. No. 12,957, Feb. 16, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,362
Int. Cl.³ A47B *47/04;* A47H *33/00*
U.S. Cl. 52—36 **28 Claims**



1. A cover for wall mounted air conditioners and the like comprising first wall means,

said first wall means having a peripheral edge,

and second wall means attached to said first wall means adjacent said peripheral edge and extending therefrom in non-parallel relationship therewith, and wherein said first wall means is a first wall unit rectangular in plan view,

said second wall means comprising a second wall unit connected with each edge of said first wall unit,

said second wall units also being rectangular in plan view,

each of said wall units comprising spaced apart wall panels,

insulating material between said wall panels,

a sheet of flexible material attached to one side of said first and second wall units and forming a flexible joint therebetween,

said second wall units being adapted to move relative to said first wall unit from a co-planar position therewith to a substantially perpendicular position with respect thereto,

means for holding said second wall units in said perpendicular position,

and wherein the contiguous ends of said second wall units mate together in a mitered joint and adhesive means are applied to the mitered surfaces to hold said second wall units against movement,

and including weatherstripping applied to the outer peripheral edges of said second wall units,

and wherein said flexible sheet is a plastic material having a wood grain appearance,

and including a clip for mounting said cover on supporting structure, said clip including pointed means for penetrating said wall means and thereby fastening said clip to said wall means, said clip also including an opening for receiving a fastener adapted to fasten said clip to said supporting structure, and

wherein said clip includes a first body portion adapted to be placed against said supporting structure,

said opening comprising a slot extending inwardly from an edge of said first body portion,

a second body portion extending from said first body portion at substantially right angles thereto,

said pointed means extending at substantially right angles to said second body portion and substantially parallel to said first body portion, and

wherein said pointed means comprising a pair of elements which have pointed distal ends and which are substantially semi-circular in cross-section, and

wherein said wall panels are formed of wood, and

wherein said insulating means is a styrofoam material, and

wherein said flexible material is vinyl, and

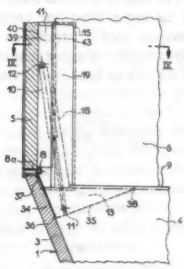
wherein said weather stripping means is an elongate strip attached to the exterior peripheral edge of said second wall means and effectively forming an extension thereof, said strip being adapted to directly engage a wall surface and seal the interior of said cover, and

wherein said weather stripping is a resilient foam material.

4,332,115
FOLDING CARAVAN

Michel Dufrancatel, Bois Guillaume, France, assignor to Societe Anonyme: Esterel Caravanes, Le Houlme, France

Filed Nov. 28, 1979, Ser. No. 97,990
Claims priority, application France, Nov. 28, 1978, 78 33584; May 15, 1979, 79 12273
Int. Cl.³ E04B *1/346*
U.S. Cl. 52—66 **14 Claims**



1. Folding rigid caravan with assisted erection comprising a base carried by a chassis defined by a floor and four lower panels, each having an upper horizontal edge, two upper end panels and two upper side wall panels pivotal about horizontal axes and disposed respectively, either substantially horizontally within the upper opening of the base or substantially vertically as extensions of the corresponding lower panel when the caravan is folded or erected, each upper panel having a thickness, side edges, and two faces defining said thickness, a roof resting horizontally either on the base, or on the upper panels respectively when the caravan is folded or fully erected, movaly associated with the upper panels by rollers engaging in guideways; at least one unidirectional extensible erecting element, each connected to the base and to an upper panel to urge said upper panel to pivot permanently in the caravan unfolding direction, characterized by the fact that each erecting element is disposed permanently at least partly within the thickness of the panels defining the caravan, concealed from the outside and inside, each erecting element in the erected condition being within a space defined by an upper horizontal edge of a lower panel, a side edge of the upper panel perpendicular to the lower panel and the two faces of the upper panel parallel to the lower panel when the caravan is erected.

4,332,116
PREFABRICATED BUILDING STRUCTURE

Howard A. Buchanan, 1014 Dent La., Cumberland, Md. 21502

Filed May 12, 1980, Ser. No. 148,592
Int. Cl.³ E04B *7/00, 1/343*
U.S. Cl. 52—82 **3 Claims**

1. A building structure formed from prefabricated building components, the plan view of which is a polygon having

a central support column;

a plurality of floor components with each floor component having the shape of an isosceles triangle, and wherein each floor component is fastened to the center support column at the point where the two equal sides of the isosceles triangle are joined, and wherein the floor components are sequentially assembled and fastened to said center support columm, the sum of the angles incorporated between the two equal sides of each isosceles triangle of the assembled floor components totaling 360°;

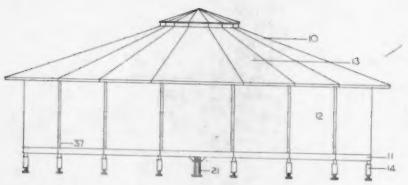
a plurality of roof components with each roof component having the shape of an isosceles triangle, and wherein each roof component is fastened to the center support column at the point where the two equal sides of the isosceles triangle are joined, and wherein the roof components are sequentially assembled and fastened to said center support column, the sum of the angles incorporated between the two equal sides of each isosceles triangle of the assembled roof components totaling 360°;

a plurality of vertically adjustable columns supporting and connecting said floor components at the perimeter of the polygon;

wherein the improvement comprises:

a. said triangle-shaped floor components are each formed from two wood stringers of equal lengths joined together at one end and having at least one cross joist;

b. said triangle-shaped roof components are each formed from two wood stringers of equal lengths joined together at one end and having at least one cross joist;



c. said wood stringers each have a notched end so that a slot is formed at the point of each triangle-shaped component where said stringers are joined;

d. said wood stringers are gained;

e. each triangle-shaped floor component and each triangle-shaped roof component have a steel plate with a single aperture, said steel plate positioned between said two gained wood stringers;

f. said central support column has a first support plate welded thereto and a first vertical flange projecting from said first support plate and circularly disposed about said central support column, said first vertical flange having a plurality of evenly spaced apertures along the circumference of said flange;

g. said central support column has a second support plate welded thereto and a second vertical flange projecting from said second support plate and circularly disposed about said central support column, said second vertical flange having a plurality of evenly spaced apertures along the circumference of said flange;

h. said triangle-shaped floor components are supported by and integrally fastened to said first support plate by means of a bolt positioned through the single aperture in said steel plate and through the slot formed by said joined stringers and through one of the plurality of apertures in said first vertical flange; and

said triangle-shaped roof components are supported by means of a bolt positioned through the single aperture in said steel plate and through the slot formed by said joined stringers and through one of the plurality of apertures in said second vertical flange.

4,332,117

VERGE AND SOAKER SYSTEMS

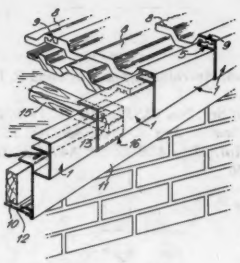
Geoffrey C. Quinnell, Pembury, England, assignor to Marley Tile A.G., Zug, Switzerland

Continuation of Ser. No. 955,756, Oct. 30, 1978, abandoned. This application Oct. 29, 1979, Ser. No. 89,233

Claims priority, application United Kingdom, Oct. 31, 1977, 45245/77

Int. Cl.³ E04D *13/15*

U.S. Cl. 52—94 **12 Claims**



1. A pitched roof having a plurality of longitudinally overlapping individual roofing units, each of which has interlocking regions extending adjacent both lateral edges thereof, the roofing units over the major part of the roof being laterally interlocked along both edges by means of said interlocking regions, and there being a part of said roof where a longitudinal row of roofing units have one edge interlocked with laterally adjacent units and one free edge, the free edges being capped by a plurality of overlapping individual capping members each provided with a channel capping the upper and lower faces of a respective roofing unit, the channel being defined between a pair of short rigid flanges which extend only over the unused interlocking region adjacent the free edge of the respective roofing unit.

4,332,118

METHOD AND SUPPORT FOR ANGULARLY ADJUSTING A BUILDING ELEMENT

Stefan Westberg, Växjö, Sweden, assignor to A-Betong AB, Växjö, Sweden

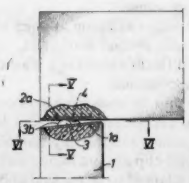
PCT No. PCT/SE79/00177, § 371 Date Apr. 29, 1980, § 102(e) Date Apr. 8, 1980, PCT Pub. No. WO80/00464, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 28, 1979, Ser. No. 193,576

Claims priority, application Sweden, Aug. 29, 1978, 7809101

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—263 **10 Claims**



1. A method of angularly adjusting a building element on a support element, such as a beam on a pillar, there being inserted between said elements an insert through which pressure from the building element is transmitted to the support element via an upper surface in engagement with a lower support surface on the building element and a lower surface in engage-

ment with an upper support surface on the support element, comprising; forming the upper and lower support surfaces and the upper and lower engagement surfaces so that at the location of use:

(a) two of the surfaces are planar and mutually parallel;

(b) one surface is planar but not parallel with the surfaces recited in (a); and

(c) one surface is a curved surface which is generated by a straight line and which is brought into abutment with the non-parallel planar surface; and

rotating the insert about an axis extending perpendicularly to one of the planar surfaces so that the desired angular position of the building element to the support element is obtained through line abutment of the curved surface with an adjacent planar surface.

4,332,119

WALL OR PANEL CONNECTOR AND PANELS THEREFOR

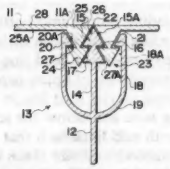
Norman J. Toews, Box 220, Steinbach, Manitoba, Canada

Filed Mar. 3, 1980, Ser. No. 126,641

Claims priority, application Canada, Mar. 5, 1979, 332762

Int. Cl.³ E04B *2/00*

U.S. Cl. 52—772 **11 Claims**



1. Connector means for securing adjacent panels together in spaced apart relationship in which said panels are substantially rectangular and are provided with web engaging means along a pair of opposing edges; said connector web comprising in combination a panel edge engaging claw assembly on each end of said web, the web engaging means on the associated panel snap engaging within said claw assembly, and a web extending between said panel edge engaging claw assemblies, said claw assembly including a central jaw portion and an outer jaw portion situated on each side of said central portion, at least said outer jaw portions being resilient whereby said outer jaw portions are normally urged towards said central jaw portion.

4,332,120

NUCLEAR FUEL PELLET LOADING APPARATUS

John Haynes, and Thomas B. Huggins, Sr., both of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 5, 1980, Ser. No. 127,271

Int. Cl.³ B65B *5/10, 3/28*

U.S. Cl. 53—245 **1 Claim**

1. Pellet loading apparatus comprising:

a stationary base supporting a housing having a container therein arranged to receive nuclear fuel pellets from a pellet discharge mechanism;

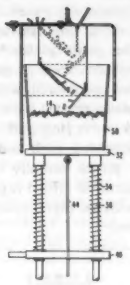
a chute attached to the upper part of said housing, the inlet to said chute being positioned immediately beneath an opening which discharges pellets from the pellet discharge mechanism into the chute inlet, said chute defining a gravity feed flow path consisting of vertically disposed zig-zag plates extending from the chute inlet to its outlet;

a mechanism positioned below said chute to receive pellets discharged from the chute outlet;

said mechanism including the stationary base which supports the housing;

multiple guide arms extending vertically through said stationary base and terminating at their upper ends in a horizontal disposed platform, said arms being mounted for sliding movement vertically in said base, and biasing springs on each of said arms between the base and platform for constantly biasing the platform in an upward direction;

a removable pellet container adapted to be positioned on said platform, said container having a size and configuration such that it encloses substantially the complete chute when empty and biased to an uppermost position, and stops on said arms which limit platform movement upwardly;



said springs having constants such that when the container is placed on the platform and gradually loaded with pellets, pellet weight therein causes the springs to gradually compress and thus always maintain the level of pellets in the container at substantially the same distance beneath the outlet of said chute during the filling operation, to thereby limit the falling distance of pellets into the container; and

actuation means beneath said base connected with said platform for moving the platform vertically against the normal bias of said springs to permit placing and removing the container on said platform.

4,332,121

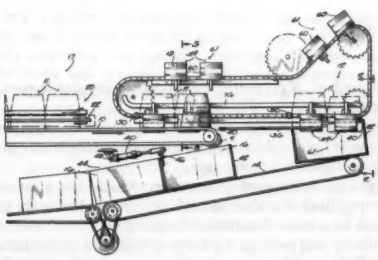
LOADING BLADES FOR PACKAGING APPARATUS

Biagio J. Nigrelli, Kiel, Wis., assignor to Nigrelli Corporation, Kiel, Wis.

Filed Jan. 16, 1980, Ser. No. 112,589

Int. Cl.³ B65B *39/14, 5/04*

U.S. Cl. 53—251 **3 Claims**



1. In a case loader having an article conveyor and a case conveyor located beneath the article conveyor and in which the case conveyor path merges into the conveying path of the article conveyor from below, the improvement for guiding the articles into the cases comprising a plurality of article loading plates arranged in pairs, with one member of each pair located on opposite sides of the conveying path, means for supporting and moving the loading plates alongside the conveyed articles, and means for pivotally supporting said plates for movement laterally inwardly and outwardly with respect to the convey-

ing path about pivotal axes parallel to said conveying path and means for moving said guide plates between advanced and retracted positions with respect to the conveying path to enable the articles to move generally horizontally along the conveying path in between the retracted plates, with the loading plates engaging the sides of the cartons in the advanced position to guide the articles into the carton and in a retracted position, the plates being free of the articles, and wherein said means for supporting and moving said guide plates comprises spaced chains and brackets connected to the chains and said loading plates being pivotally connected to said brackets for movement about axes generally parallel with the axis of movement of the articles along the conveyor, and wherein said means for moving the guide plates between advanced and retracted positions includes arms pivotally connected to said brackets, spring means associated with said plates and said brackets to bias said plates against the articles, and cam rails on opposite sides of said conveying path and running generally parallel with said conveying path and engageable with said arms to displace the plates laterally outwardly against said spring bias when required to afford registry and interfitting of the plates with the articles therebetween and to release the articles from said plates.

4,332,122

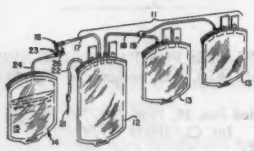
METHOD OF MAKING AND FILLING LIQUID-CONTAINING STERILE PACKAGES SUCH AS BLOOD BAGS

Ronald A. Williams, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 927,342, Jul. 24, 1978, Pat. No. 4,223,675. This application Jun. 23, 1980, Ser. No. 161,975

Int. Cl.³ B65B *55/02*

U.S. Cl. 53—425 **11 Claims**



1. A method of preparing liquid-containing sterile packages comprising the steps of:

fabricating a package which has a normally empty fluid chamber and which can be effectively sterilized only by dry-sterilization techniques;

fabricating a dispensing container which has a normally empty fluid chamber and which can be effectively sterilized by wet-sterilization techniques;

sterilizing said package by a dry-sterilization technique with its fluid chamber empty;

introducing a liquid into the fluid chamber of said dispensing container;

sterilizing by a wet-sterilization technique said dispensing container and the liquid contained within its fluid chamber;

providing a sterile flow path between the fluid chambers of said wet-sterilized dispensing container and said dry-sterilized package;

transporting through said sterile flow path a premeasured unit of said sterilized liquid from out of the fluid chamber of said wet-sterilized dispensing container and into the fluid chamber of said dry-sterilized package;

sealing said sterile flow path; and

severing said wet-sterilized dispensing container from said now filled, dry-sterilized package.

4,332,123

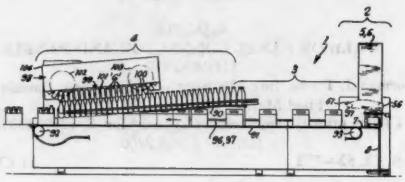
PACKAGING MACHINE AND METHOD

Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 23, 1980, Ser. No. 161,799

Int. Cl.³ B65B *21/04, 21/12*

U.S. Cl. 53—475 **9 Claims**



1. A method of loading bottles into bottle carriers comprising continuously feeding a succession of bottles carried by a downwardly inclined suspension feed line through a loading zone and feeding a succession of bottle carriers by means of a substantially horizontal carrier feed line in the same direction through said loading zone and below the suspension feed line, timing the feed of both said lines such that each bottle arrives at a position directly above a carrier when the convergence of said feed lines has brought the bottle and carrier into close proximity, characterized by controlling the attitude of the bottle so that it enters the carrier at a finite angle with respect to the vertical by gripping the bottle adjacent its top by means of gripping elements provided by said suspension feed line and by engaging the bottle adjacent its heel by means of guide elements located intermediate said suspension feed line and said carrier feed line, and detaching the bottle from said suspension feed line in said loading zone so that the bottle is deposited in the carrier.

4,332,124

DEVICE FOR DELIVERING AND PACKAGING FOLDED BOXES RECEIVED FROM A FOLDER-GLUER

Jean-Philippe Jaton, Chapelle, Switzerland, assignor to Bobst, S.A., Switzerland

Filed May 14, 1980, Ser. No. 149,714

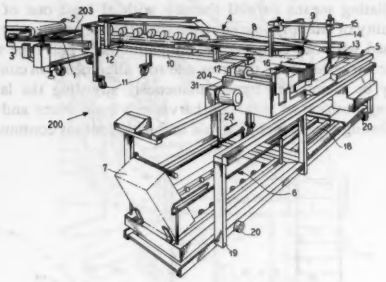
Claims priority, application Switzerland, May 18, 1979, 4633/79

Int. Cl.³ B65B *5/10*

U.S. Cl. 53—540 **12 Claims**

1. A device for delivering and packaging folded boxes which are folded and glued in a folder-gluer, said device comprising a frame, first means for conveying the folded boxes from the delivery station of the folder-gluer, said first means including a first helical conveyor receiving a flow of folded boxes in an overlapping shingled relationship from the delivery station and conveying said flow of boxes without changing any lateral position of the boxes in said flow; means mounted on said frame for converting the direction of movement of a flow to a stacked-like flow of boxes moving in a direction perpendicular to the plane of the folded boxes; second means for receiving the stack of moving boxes from the means for converting and conveying the stack in a direction extending transverse to the direction of flow of boxes in the first means, said second means including a second conveyor arranged in the frame to extend transverse to the first helical conveyor and from the means for converting, said second conveyor termination in means for filling the folded boxes into a packaging container and coact-

ing intermittently driven roll; means for introducing and conveying packaging containers comprising a roller conveyor, means mounting the roller conveyor in the frame beneath the second conveyor, said means for mounting enabling the roller conveyor to move both transverse and along the direction of



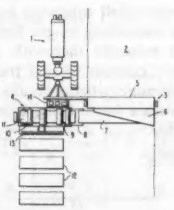
conveying of the second conveyor and vertically toward and away from the second conveyor; and means for removing the filled packaging containers comprising a second roller conveyor, means mounting said second roller conveyor in said frame for movement between a level position to a slant position to enable ejecting filled containers from the device by gravity.

4,332,125

APPARATUS AND METHOD FOR PRODUCING HIGHLY NUTRITIVE STORAGE STABLE FORAGE PLANT MATERIAL

Richard D. Holdren, 5384 Co. Rd. 1, West Liberty, Ohio 43357

Filed Aug. 19, 1980, Ser. No. 179,465
Int. Cl.³ A01D *61/00*
U.S. Cl. 56—1 **14 Claims**



1. A method of producing a highly nutritive, storage-stable forage plant material in mat configuration having a moisture content of 20% by weight or less and being readily recoverable from a field without substantial tearing or breaking, said method comprising the steps of:

(a) cutting standing forage crops at a point near the ground so as to provide freshly cut forage and to leave a stubble of cut stems on the field;

(b) fiberizing said freshly cut forage to produce fiberized forage in which fibers of the forage are exposed and at least partially separated, and substantially all of the cells of the forage are ruptured, to release and express natural juices from within the cells;

(c) subjecting said fiberized forage to pressure to further express natural juices therefrom, and to compress and compact said fiberized forage to cause said fibers to interlock and intertwine with each other to form a cohesive and shape-sustaining mat having a moisture content no greater than 75% by weight;

(d) collecting said natural juices expressed from said freshly cut forage to provide a reservoir of collected natural juices;

(e) separating said mat into cohesive and shape-sustaining mat sections and laying said mat sections sequentially onto said stubble so that said mat sections are supported off the ground by said stubble;

(f) applying at least a portion of said collected natural juices to an upper surface of each of said cohesive and shape-sustaining mat sections on the stubble to produce a treated mat section having a nutritive value substantially equivalent to that said freshly cut forage prior to expressing said natural juices, said applying of said natural juices to said upper surface of said cohesive and shape-sustaining mat sections facilitating ready moisture evaporation and rapid drying of said treated mat sections while on said stubble;

(g) exposing said treated mat sections to natural solar radiation and to the passage of air over both the upper and under sides of said treated mat sections sufficiently to dry said treated mat sections to a moisture content of 20% by weight or less, to produce dried mat sections which are cohesive and shape-sustaining and capable of being collected without substantial tearing or breaking; and

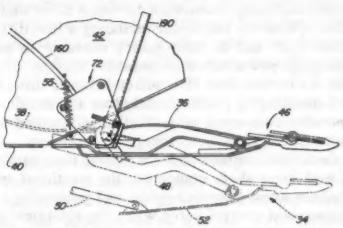
(h) collecting said dried mat sections from said stubble.

4,332,126

AUTOMATIC HEIGHT CONTROL FOR A HARVESTER HEADER

James M. Van Auwelaer, Coal Valley; Eugene B. Hutchinson, and Jerome A. Braet, both of East Moline, all of Ill., assignors to Deere & Company, Moline, Ill.

Filed Sep. 11, 1980, Ser. No. 186,073
Int. Cl.³ A01D *67/00*
U.S. Cl. 56—10.2 **25 Claims**



1. In a crop harvester having a mobile body with an operator station and a source of electrical power and carrying a transversely extending crop gatherer vertically adjustable relative to the body and including a frame and a plurality of field surface engaging feeler elements pivotally carried by the frame and power lift means including raise and lower portions responsive to an electrical signal and operative respectively to raise and lower the gatherer relative to the body, a gatherer height control system for cooperating with the power lift means and automatically maintaining the gatherer in a selected height range relative to the field surface comprising:

a sensor switch body supported in fixed relation to the gatherer frame and having a wall;

a plurality of switch contacts mounted on the wall including a common input contact connectable to the electric power source and a plurality of substantially side-by-side spaced output contacts;

a wiper arm mechanically coupled to the feeler elements for rotational movement responsive to the movement of at least one of the feeler elements relative to the frame and carrying a connecting brush assembly, the wiper arm being operatively associated with the switch body and disposed so that as the arm moves, the connecting brush assembly while maintaining continuous engagement with the common input contact, successively connects it electrically to one or more of the output contacts; and

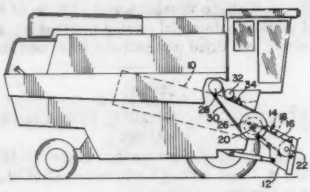
switching means for selectively making electrically connectable at least one first output contact to the raise portion of the power lift means so as to signal it to raise the gatherer and at least one second contact to the lower portion of the power lift means so as to signal it to lower the header so as to define an operating height set point corresponding to a predetermined position of the wiper arm relative to the sensor switch body and hence of at least one of the feeler elements to the gatherer frame and relationship of the gatherer to the field surface.

4,332,127

COMBINE FEEDER DRIVE CONTROL

Richard W. Staiert, Geneseo, and Eugene J. Krukow, Cordova, both of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Oct. 14, 1980, Ser. No. 196,993
Int. Cl.³ A01D *75/18*
U.S. Cl. 56—10.2 **7 Claims**



1. In a combine for harvesting and threshing a crop, comprising:

a feeder for feeding crop material into the combine, said feeder including a conveyor having a drive shaft;

a drive system for the feeder including a belt drive to said drive shaft and an idler pulley movable to engage or disengage power drive to said drive shaft;

means for moving said idler pulley between drive engaging and disengaging positions including a hydraulic cylinder operably connected to said idler pulley and a control valve for selectively actuating said cylinder;

and electronic control means for sensing the rotational speed of said drive shaft, comparing the rotational speed to a predetermined reference speed, and generating a signal to actuate said control valve when the rotational speed becomes less than said reference speed whereby power drive to the feeder is stopped to protect the feeder under extraordinary loads.

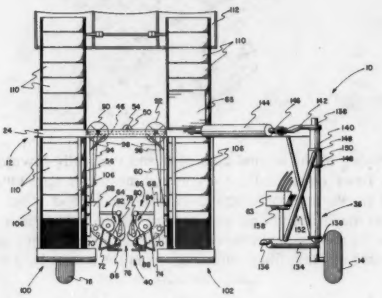
4,332,128

PULL TYPE AUTOMATIC TOBACCO HARVESTER

Arvin W. Prince, Whiteville, N.C., assignor to Harrington Manufacturing Company, Lewiston, N.C.

Filed Jul. 1, 1976, Ser. No. 701,791
Int. Cl.³ A01D *45/16, 45/00, 73/00*
U.S. Cl. 56—27.5 **22 Claims**

1. A pull type automatic tobacco harvester adapted to be connected to a tractor and pulled through a tobacco field where a plurality of two or more laterally spaced tobacco rows are provided on at least one side of a tractor passing lane in said tobacco field and wherein said pull type automatic tobacco harvester is adapted to harvest each of at least the two rows of said plurality of rows adjacent said tractor passing lane, said pull type automatic tobacco harvester comprising: a ground engaging mobile main frame adapted to be pulled through said tobacco field during the tobacco harvesting operation; leaf defoliating means carried by said mobile main frame for defoliating tobacco leaves from respective tobacco stalks as said pull type automatic tobacco harvester is pulled through said tobacco field; conveying means operatively carried by said mobile main frame for receiving leaves defoliated by said leaf defoliating means and for conveying said leaves to an area where the leaves are collected; and row alignment control means operatively associated with said tobacco harvester for simultaneously and together laterally adjusting the trailing position of both said harvester's main frame and said defoliating means with respect to said tractor when said harvester is connected thereto for aligning said mobile main frame and said defoliating means carried thereby with at least one of said plurality of laterally spaced rows, such that any particular row aligned with can be harvested by pulling said pull type automatic harvester along that row and row alignment can continuously be maintained by simultaneously adjusting the lateral trailing position of both said harvester's main frame and said defoliating means such that said defoliating means continues to



be properly aligned with at least one row during the harvesting operation, said row alignment control means including sleeve means fixed to said mobile main frame; a vertically disposed shaft rotatively journaled within said sleeve means; a radius arm fixed to said vertically disposed shaft and extending therefrom; a hydraulic cylinder operatively connected between said mobile main frame and said radius arm for selectively rotating said vertically disposed shaft rotatively journaled within said sleeve means; and a connecting tongue fixed to said vertically disposed shaft and rotatable therewith, said tongue being adapted to pivotably connect to said tractor such that the actuation of said hydraulic cylinder results in the trailing position of said mobile main frame being laterally adjusted with respect to said tractor.

4,332,129

MULTI-SPINDLE DOUBLE TWIST TWISTING MACHINE

Heinz Schipper; Wolfgang Hartig; Klaus Weber, all of Remscheid-Lennep; Josef Blumberg, Hückeswagen, and Bernd Wessolowski, Remscheid, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

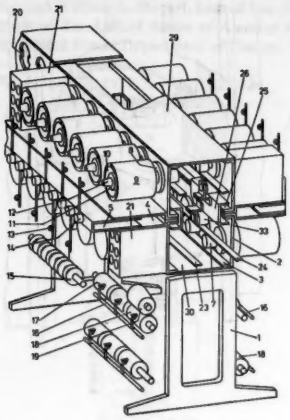
Filed Jun. 20, 1980, Ser. No. 161,392

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925458; Jun. 23, 1979, 2925459; Jun. 23, 1979, 2925460; Aug. 4, 1979, 2931716

Int. Cl.³ D01H *1/20, 1/241*
U.S. Cl. 57—105 **23 Claims**

1. In a multi-spindle double twist twisting machine of the type in which spindle assemblies are mounted with whorls aligned in at least one longitudinal row, a belt drive assembly for driving said whorls comprising a drive belt extending longitudinally adjacent said whorl row, belt supporting and guiding elements for guiding said belt in contact with said

whorls, means for supporting said belt guiding elements, said support means being mounted in said machine independent of



the mounting of said spindle assemblies, and means for driving said belt.

4,332,130

APPARATUS FOR INFEEDING TEXTILE BAND MATERIAL TO A CONSUMER

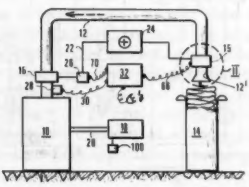
Hermann Gasser, Zurich; Paolo di Benedetto, Uster, and Johann W. Ferri, Greifensee, all of Switzerland, assignors to Luwa AG, Zurich, Switzerland

Filed Jun. 30, 1980, Ser. No. 164,292

Claims priority, application Switzerland, Jul. 10, 1979, 6417/79

Int. Cl.[3] **D01H** *15/00;* **B65H** *17/32, 51/16;* **D01H** *13/04*

U.S. Cl. 57—279 **22 Claims**



1. An apparatus for infeeding textile band material to a consumer, especially for infeeding a sliver deposited in a can to a spinning machine, comprising:

means defining a sliver feed location;

a consumer for processing the sliver;

a transport tube extending between said feed location and said consumer;

means for generating within the transport tube an air infeed current which flows in the direction of the consumer;

said transport tube having an inlet opening;

holder means operatively associated with said inlet opening of said transport tube;

said holder means in conjunction with the action of the air infeed current enabling seizing of a starting portion of said sliver; and

said holder means serving for retaining the starting portion of the sliver in a preparatory position from which it can be seized by the air infeed current.

4,332,131

APPARATUS AND PROCESS OF MANUFACTURING A METAL CORD

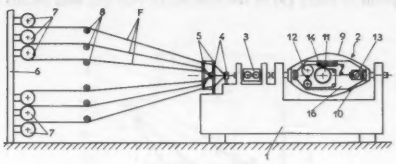
Alain Palsky, Savonnieres, and Guy Vella, Bar le Duc, both of France, assignors to Rhone Poulenc Textile, Lyons, France

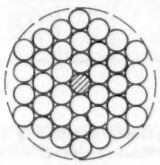
Continuation of Ser. No. 68,720, Aug. 22, 1979, abandoned. This application Jun. 10, 1981, Ser. No. 272,345

Claims priority, application France, Aug. 22, 1978, 78 24532

Int. Cl.[3] **D07B** *1/06, 3/00;* **D02G** *3/48*

U.S. Cl. 57—213 **9 Claims**





1. A single strand steel cord for reinforcing rubber articles such as tires, said cord comprising from nine to 52 single steel wires of the same diameter, twisted together in the same direction and with the same pitch, said twisted wires having a cross-sectional shape of a compact stack of polygonal contour, said cross-sectional shape being uniform along the entire length of the cord, said wires being disposed in at least one concentric layer of outer wires arranged around a central basic structure of 1, 2, 3 or 4 inner wires, all of the wires of said central basic structure and of each concentric layer, except the outer most concentric layer, tangentially contacting six adjacent wires, the wires in the outer most concentric layer, between the wires forming the corners of said polygonal contour, tangentially contacting four adjacent wires, and the wires forming said corners tangentially contacting three adjacent wires, whereby the mechanical properties of said cord, including breaking load, rigidity and fatigue, are uniform in the lengthwise direction.

4,332,132

FALSE-TWIST APPARATUS

Christian Bru, Renaison, and Jean-Claude Dupeuble, Roanne, both of France, assignors to ASA S.A., France

Filed Jun. 23, 1980, Ser. No. 162,322

Claims priority, application France, Jun. 25, 1979, 79 17259

Int. Cl.[3] **D02G** *1/02*

U.S. Cl. 57—280 **11 Claims**

1. A yarn texturizing machine comprising a plurality of treatment positions, each said position comprising, in operational sequence:

a supply (**1**) for the yarn (**2**) to be processed;

a first yarn feeder (**3**);

a heating device (**4**);

a cooling zone (**5**) for the heated yarn;

a false-twist spindle (**6**);

a second yarn feeder (**7**);

a wind-up device (**8**);

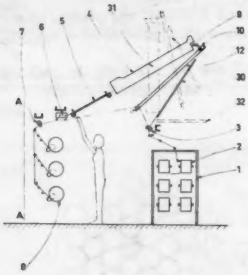
said machine defining a central frame on either side of which are arranged symmetrically the treatment positions and

defining between the yarn supply and the wind-up device, a service zone for the personnel;

the heating device (4), the cooling zone (5) and the point where the yarn enters the false-twist spindle (6) being in substantially straight alignment and arranged at least in part above the service zone; and

the heating device (4) being situated upstream of spindle (6) in the machine upper part and being an open heater;

said machine further including means for launching and guiding the yarn between the first yarn feeder (3) to the point of entry (9) of the heating device (4), said means for



launching and guiding comprising a mobile lacing-up device (10) on a fixed ramp (12) extending from a point proximate the point of entry (9) of the heater (4); said launching device (10) being associated with a yarn deflecting element whose purpose is to distribute the twist communicated by the spindle in such a way that, when launching, the majority of the twist backs up to the level of the first yarn feeder (3) and that, during normal operation, a minor part of the twist backs up to the first yarn feeder (3), the majority of the twist remaining in the heating device (4).

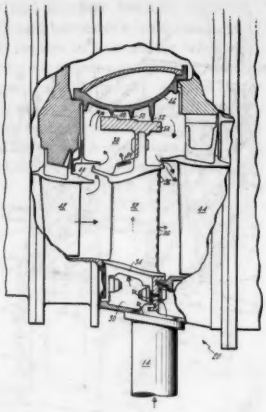
4,332,133

COMPRESSOR BLEED SYSTEM FOR COOLING AND CLEARANCE CONTROL

Frederick M. Schwarz, Glastonbury; James G. Griffin, West Hartford, and Vytautis P. Gudaitus, Bristol, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 14, 1979, Ser. No. 94,251
Int. Cl.³ F02C *3/06, 7/18, 7/28*
U.S. Cl. 60—39.75 **6 Claims**

1. A system for cooling turbine section rotation and stationary components contained in an engine casing and maintaining seal clearance between the rotating and stationary components at a minimum for a gas turbine engine having a compressor section, said seal having a portion connected to the stationary components and another portion connected to the rotational components and there being a gap therebetween, at least two separate ducts externally of said engine casing interconnecting the compressor section from a common source and turbine section whose components are intended to be expanded or contracted to maintain a minimum gap, valve means operable to a closed and opened position in one of said ducts and the other of said ducts having continuous feed at a restrictive capacity during the closure of said valve means whereby when minimum compressor air is required to maintain minimum



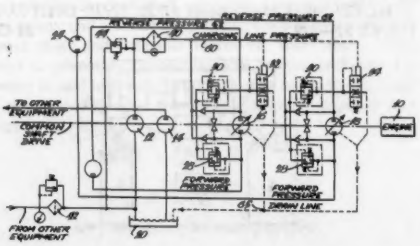
clearance of said gap, said valve means is operated at the closed position.

4,332,134

HYDROSTATIC TRANSMISSION BLEED-OFF VALVE

Gary L. Cochran, and Donald J. Parquet, both of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Dec. 3, 1979, Ser. No. 99,316
Int. Cl.³ F16K *31/12*
U.S. Cl. 60—464 **12 Claims**



5. A bleed-off valve for a hydrostatic transmission having a closed hydraulic operating loop including high and low pressure sides, a drain line to which said bleed valve responsively meters hydraulic fluid from one of the sides of said closed loop, and a charging line for replenishing fluid in said closed loop, comprising:

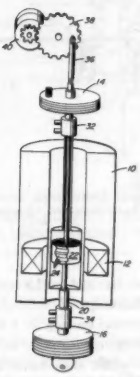
a housing disposed in fluid flow communication with said one side of said closed loop and said drain line having a passage communicating between said one side and said drain line, and

poppet valve means disposed within said housing passage and including means responsive to the fluid pressure within said one side of said closed loop and means responsive to the fluid pressure in said charging line whereby metered flow of hydraulic fluid from said closed loop to said drain line is shut off when fluid pressure in said charging line is lower than a predetermined fluid pressure for said closed loop.

4,332,135
ACTIVE MAGNETIC REGENERATOR

John A. Barclay, and William A. Steyert, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 27, 1981, Ser. No. 228,836
Int. Cl.³ F25B *21/02*
U.S. Cl. 62—3 23 Claims



1. A method of refrigeration approximating a Stirling Cycle from an initial state of partial magnetization and utilizing two, two-phase external heat transfer fluids at temperatures about T_C and about T_H, the method comprising the steps of

(a) magnetizing a body comprising one or more porous magnetic materials near but above their Curie temperatures, each at a temperature between about T_C and about T_H, flowing an internal heat transfer fluid at an initial temperature substantially T_C through the porous material during a relatively higher magnetization of the body, any temperature increase caused by magnetization being compensated by temperature decrease due to thermal wave movement through the material, causing the internal heat transfer fluid to exit the body at a temperature slightly above about T_H, which approximates isothermal magnetization;

(b) continuing the internal heat transfer fluid flow into the body at about T_C and decreasing the magnetic field slightly as average temperature within the body decreases, magnetization remaining essentially constant, approximating an isomagnetization temperature decrease within the body, the internal heat exchange fluid exiting the body at slightly above about T_H;

(c) reversing the flow of the internal heat exchange fluid at about T_H through the body as demagnetization is compensated by temperature increase due to thermal wave motion in the body, the fluid exiting the body at slightly less than about T_C, approximating isothermal demagnetization; and

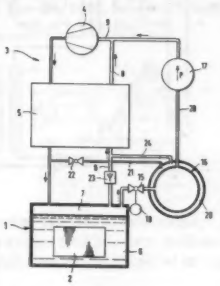
(d) continuing the reverse flow of internal heat exchange fluid through the body and increasing slightly the magnetic field therein to maintain constant magnetization as the average temperature of the body increases, the fluid exiting at slightly less than about T_C, approximating an isomagnetization temperature increase; and

(e) transferring heat from the internal heat exchange fluid to the two, two-phase external heat exchange fluids appropriately during the cycle to accomplish refrigeration.

4,332,136
REFRIGERATING APPARATUS

Hans Quack, Pfaffikon, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Apr. 22, 1981, Ser. No. 256,403
Claims priority, application Switzerland, Apr. 29, 1980, 3296/80
Int. Cl.³ F17C *13/00*
U.S. Cl. 62—54 10 Claims



1. A refrigerating apparatus comprising

a housing for a refrigerant bath, said housing having a chamber for receiving vaporized refrigerant;

a refrigerating circuit including a compressor having an intake connected to said chamber for receiving and compressing a flow of vaporized refrigerant from said chamber and an outlet connected to at least one cooling stage for at least partial liquefaction of the compressed refrigerant delivered from said compressor and an outlet leading from said cooling stage for delivery of said at least partially liquefied refrigerant to said chamber;

a buffer tank connected to said chamber for receiving vaporized refrigerant therefrom;

a valve between said housing chamber and said buffer tank for controlling a flow of vaporized refrigerant from said chamber to said tank; and

a vacuum pump communicating said buffer tank with said compressor intake to deliver vaporized refrigerant from said tank to said compressor.

4,332,137
HEAT EXCHANGE APPARATUS AND METHOD HAVING TWO REFRIGERATION CIRCUITS

Richmond S. Hayes, Jr., Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,599
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—81 11 Claims

10. A method of controlling an air conditioning system having multiple refrigeration circuits including an outdoor heat exchanger for each circuit and a fan for circulating air serially through the outdoor heat exchangers, a compressor for each circuit, an indoor heat exchanger for each circuit for conditioning air of an enclosure which comprises the steps of

selectively energizing the compressors to transfer heat energy between the outdoor heat exchanger and the indoor heat exchanger of each circuit;

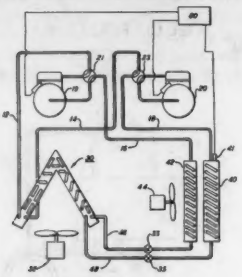
energizing the fan to circulate a heat transfer medium in heat exchange relation with the outdoor heat exchangers,

generating a defrost signal for commencing defrost of at least one outdoor heat exchanger,

conducting relatively hot refrigerant to at least one of the outdoor heat exchangers upon the generation of a defrost signal, and

modifying the step of energizing the fan upon the generation

of a defrost signal such that the heat transfer medium flows in heat exchange relation with the outdoor heat exchanger rejecting heat energy, absorbs a portion of said heat energy and then flows into heat exchange relation



with the outdoor heat exchanger to be defrosted, the heat transfer medium rejecting heat energy to the outdoor heat exchanger to be defrosted to melt the frost accumulated thereon.

4,332,138

REFRIGERATING APPARATUS

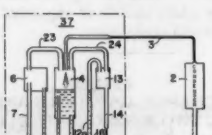
Noboru Nakagawa, Osaka; Toshiyuki Oonishi, Takatsuki; Masato Tsutsumi, Osaka, and Akira Kawamoto, Takatsuki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 29, 1980, Ser. No. 154,464

Claims priority, application Japan, Aug. 8, 1979, 54-101087; Aug. 8, 1979, 54-101088

Int. Cl.³ F25B *5/00*

U.S. Cl. 62—199 **8 Claims**



1. In refrigerating apparatus including a compressor, a plurality of compartments to be controlled to different temperatures, each compartment being thermally insulated from ambient temperature by insulation wall members and being provided with a refrigerant evaporator; and feed control means for controlling refrigerant flow caused by said compressor to at least one of said evaporators; the improvement wherein

said feed control means includes a vapor bubble pump positioned within one of said insulation wall members adjacent one of said compartments, and wherein said vapor bubble pump is mounted on a surface spaced from the outer surface said adjacent compartment a distance L for maintaining the temperature of said bubble pump lower than the ambient temperature of said one of said insulation wall members.

4,332,139

METHOD FOR STORAGE AND RECOVERY OF THERMAL ENERGY

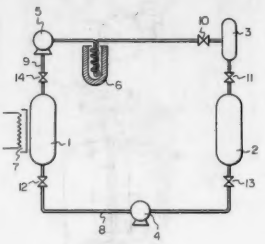
Ichiro Fujiwara, Tokyo, and Totaro Goto, Hachioji, both of Japan, assignors to The Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,331

Claims priority, application Japan, Dec. 27, 1978, 53/163371

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—101 **5 Claims**



1. A method for storage and recovery of thermal energy which comprises the steps of

(a) supplying thermal energy to a liquid complex of sodium iodide and ammonia initially at a first ammonia equilibrium pressure while simultaneously decreasing the pressure to a second equilibrium pressure to liberate ammonia from the liquid complex thereby storing the thermal energy as latent heat of combination of the ammonia and the complex, and subsequently,

(b) recovering the thermal energy by subjecting the liquid complex with the thus decreased content of ammonia and at the second equilibrium pressure, to ammonia at the first equilibrium pressure to regenerate the liquid complex to the initial content of ammonia before the absorption of the thermal energy to thereby convert the latent heat of combination of the ammonia and the complex to sensible heat.

4,332,140

COUNTER CURRENT CRYSTALLIZER

Henricus A. C. Thijssen, Son, and Bernardus G. M. van der Malen, Hagestein, both of Netherlands, assignors to Douwe Egberts Koninklijke Tabaksfabriek, Koffiebranderijin en Theehandel B.V., Utrecht, Netherlands

Division of Ser. No. 866,169, Dec. 30, 1977, Pat. No. 4,188,797. This application Jun. 7, 1979, Ser. No. 46,318

Claims priority, application United Kingdom, Jan. 12, 1977, 1086/77

Int. Cl.³ B01D *9/04*

U.S. Cl. 62—123 **4 Claims**

1. Apparatus for the continuous thickening washing of an ice slurry, comprising in combination the following cooperating elements:

(a') enclosure means defining a cylindrical space;

(b') rotatable axle coaxial with the enclosure means mentioned under (a'), said axle and said enclosure means defining together an annular cylindrical space;

(c') means to feed in the feed slurry to the space mentioned under (b');

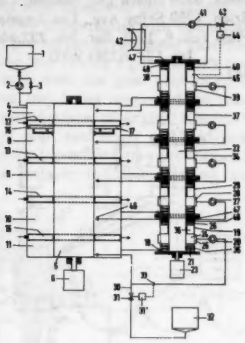
(d') filter means in said space, adapted to drain fluid from the slurry whilst retaining ice crystals, present in that slurry;

(e') means, adapted to feed out the thickened slurry;

(f') means adapted to feed out the fluid drained out by the filter means mentioned under (d');

(g') means adapted to maintain a pressure difference between

the feed in slurry and the drained out fluid such as to ensure a stream of fluid through the filter means;

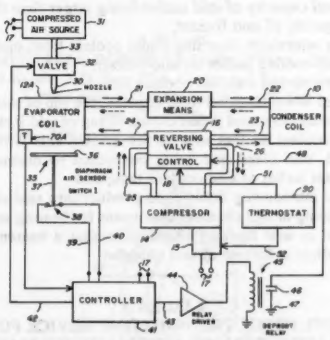


(h') between the means mentioned under (c') and (d') mechanical means adapted to push a mass of ice crystals to the feed out for the thickened slurry mentioned under (e').

4,332,141
DEFROST CONTROL SYSTEM FOR REFRIGERATION SYSTEM

Dale A. Mueller, St. Paul; Robert T. Ruminsky, Bloomington; Stephen L. Serber, New Hope, and Rodger C. Wolfgram, Burnsville, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 25, 1980, Ser. No. 181,265
Int. Cl.³ F25D *21/02*
U.S. Cl. 62—140 **2 Claims**



1. An evaporator coil defrost control system (hereinafter "defrost control system") for a refrigeration system (hereinafter "system") wherein said refrigeration system comprises refrigerant compression means, a condenser coil, an evaporator coil, and refrigerant conduit means connecting said coils, said defrost control system comprising:

a nozzle element positioned adjacent to one side of said evaporator coil at a point where frost may build on said evaporator coil;

compressed air means connected to said nozzle via valve means controllable to selectively permit air to be discharged from said nozzle element against said coil;

an air flow sensor positioned on the other side of said evaporator coil in register with said nozzle, said sensor including switch means adapted to be actuated upon said sensor being impacted by a stream of air; and

controller means having operative connections to said system, said sensor switch means, and to said valve means, said controller means being adapted to periodically actuate said valve means so as to cause periodic pulses of air to flow from said nozzle through said evaporator coil, and said controller further functioning to place said system into a defrost mode of operation upon said sensor switch

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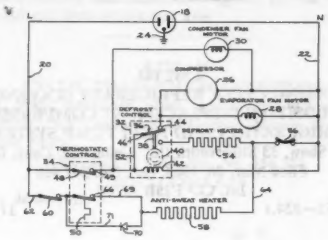
4,332,142
HOUSEHOLD REFRIGERATOR INCLUDING ANTI-SWEAT HEATER CONTROL CIRCUIT

Luis E. Prada, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 14, 1980, Ser. No. 196,802
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—152 **7 Claims**



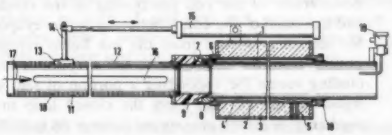
1. A refrigerator comprising a cabinet including a storage compartment, an electrical anti-sweat heating means for warming a portion of said cabinet, refrigerating means including a compressor and an evaporator for cooling said compartment, temperature sensing means to energize the compressor at one predetermined temperature and deenergize the compressor at a second lower temperature; and

switch means associated with the temperature sensing means to apply full electrical power to the electrical anti-sweat heating means when the compressor is energized and apply half electrical power to the electrical anti-sweat heating means when the compressor is not energized.

4,332,143
DEVICE FOR COOLING A GAS TO BELOW ITS DEW POINT

Erhard Soecknick, Erkrath, and Jürgen Busse, Mönchengladbach, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 22, 1980, Ser. No. 114,269
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 7902672[U]
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—284 **3 Claims**



1. In a device for cooling a gas to below its dew point by heat exchange with a low-boiling liquefied gas wherein said device includes an inner pipe, an outer pipe surrounding said inner pipe and spaced therefrom to form an annular space therebetween, means for feeding the liquefied gas into the annular space for cooling the gas flowing through the inner pipe, an annular nozzle connected to said inner pipe in flow communication therewith, said annular nozzle and said inner pipe having substantially the same inner diameter, and means for feeding the gas through said nozzle and into said inner pipe

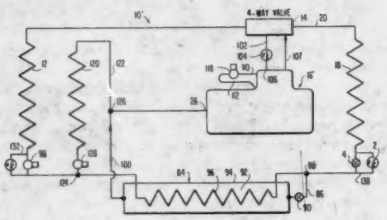
for cooling the gas before it is discharged from said inner pipe, the improvement being a drain passage leading from said annular space to said inner pipe in the general area of the connection of said nozzle to said inner pipe whereby evaporated liquefied gas may be drained from said annular space and mixed with the gas flowing through said nozzle to further cool the gas, scraper means located in said nozzle at said area of connection with said inner pipe, said scraper means being positioned against the inner surface of said nozzle, and means for reciprocating said scraper means in a longitudinal direction back and forth across the outlet of said drain passage to prevent the build-up of ice thereat.

4,332,144

BOTTOMING CYCLE REFRIGERANT SCAVENGING FOR POSITIVE DISPLACEMENT COMPRESSOR, REFRIGERATION AND HEAT PUMP SYSTEMS

David N. Shaw, 33 Silversmith Rd., Unionville, Conn. 06085

Filed Mar. 26, 1981, Ser. No. 247,968
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—324.1 **11 Claims**



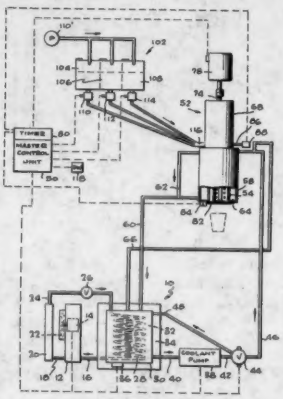
1. A closed loop refrigeration system comprising:
first and second coils,
a positive displacement compressor having a compressor working chamber,
conduit means bearing a refrigerant and forming a refrigeration cycle closed loop and connecting said first and second coils and said compressor in closed loop series,
said first and second coils functioning as condenser and evaporator for said closed loop system,
expansion means provided upstream of the coil functioning as system evaporator,
the improvement comprising:
a scavenge vapor generator within said closed loop, downstream of the coil functioning as the condenser and upstream of the coil functioning as the evaporator for recovery of heat from the hot liquid refrigerant passing from the condenser to the evaporator and including means for vaporizing a portion of said warm liquid refrigerant bled from the closed loop in heat exchange with the remaining portion of said liquid refrigerant passing to said evaporator,
means for selective delivery of scavenge refrigerant vapor from the scavenge vapor generator to said working chamber at the end of the compressor working chamber intake at a pressure higher than the suction pressure of the compressor working chamber, and
unloading means for selectively returning scavenged vapor to the compressor suction inlet for entry commonly with the suction gas returning from the coil functioning as the system evaporator during full compressor intake.

4,332,145

SYSTEM FOR MAKING FROZEN FOOD ARTICLE

Joseph M. Yuhasz, 6356 Busch Dr., Malibu, Calif. 90265, and Sean A. O'Brien, 1959 Selby Ave., Los Angeles, Calif. 90025

Filed Feb. 9, 1981, Ser. No. 232,645
Int. Cl.³ A23G *9/00*
U.S. Cl. 62—342 **7 Claims**



1. A system for making a frozen food article, said system comprising:
a cooler for providing a quantity of chilled liquid coolant and for circulating the coolant;
a freezer having a freezing chamber and a liquid coolant jacket extending around at least part of said freezing chamber, said coolant jacket being positioned above said cooler;
the thermal capacity of said cooler being larger than the thermal capacity of said freezer;
means for selectively directing liquid coolant from said cooler into said cooling jacket on said freezer;
said cooler having a closed coolant tank;
an airbleed line connected from adjacent the top of said jacket to bleed air from said jacket during filling of said jacket with liquid coolant so that said jacket quickly fills with liquid coolant, said bleed line being connected to discharge air from said jacket to said coolant tank; and
means for introducing liquid food product into said chamber for freezing in said chamber and means for beating said food material in said freezing chamber so that a beaten frozen food article is formed in said chamber.

4,332,146

DRIVE FORCE TRANSMITTING DEVICE FOR ICE-MAKING TRAY OF AUTOMATIC ICE-MAKING MACHINE

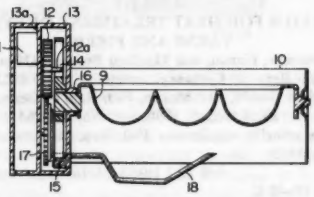
Susumu Yamazaki; Yoshinari Nagoya, both of Ohiramachi, and Masajiro Shimizu, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 209,660
Int. Cl.³ F25C *5/06*
U.S. Cl. 62—353 **5 Claims**

1. A device for transmitting a drive force to an ice-making tray for an automatic ice-making machine comprising:
a drive motor rotating in one direction only;
a drive gear connected to and rotatably supported by the drive motor;
a cam gear meshing with the drive gear and supported for rotation, said cam gear including an actuating pin extending axially thereof;
a slider pivotally supported at one end portion and formed at the other end portion opposite said one end portion with a guide groove for receiving said actuating pin and a gear

portion disposed midway between said one end portion and said guide groove, said slider being moved in pivotal movement both clockwise and counterclockwise by said guide groove cooperating with said actuating pin as the actuating pin moves in rotational movement; and

an ice-making tray having a gear directly connected thereto and meshing with the gear portion of said slider, said ice-making tray being supported for rotation through a predetermined range of angles, wherein said cam gear, said drive gear, said slider and said gear directly connected to the ice-making tray are formed of self-lubricating acetal resin by injection molding, and wherein said



actuating pin is formed integrally with said cam gear when the latter is formed by injection molding and disposed in the vicinity of an outer peripheral portion of the cam gear, and wherein said slider comprises a main body of a substantially triangular shape pivotally supported at one apex portion, and a projecting portion extending outwardly from a side opposite said one apex portion, said main body being formed with an opening defined by a plurality of sides and said gear portion at one of said plurality of sides, said guide groove being disposed in said projecting portion and extending substantially straightforwardly.

4,332,147

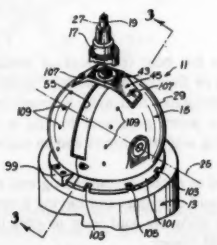
ADJUSTABLE POWER TRANSMITTING DEVICE

Leonard Grech, P.O. Box 2774, Capistrano Beach, Calif. 92624

Filed Mar. 17, 1980, Ser. No. 130,832

Int. Cl.³ F16D *3/32*

U.S. Cl. 464—109 **16 Claims**



1. An adjustable power transmitting device for rotary motion comprising:

a rotary input shaft;

means for mounting the input shaft for rotation about a first rotational axis;

a rotary output shaft;

means for mounting the output shaft for rotation about a second rotational axis;

second means for mounting the output shaft for pivotal movement about at least two non-parallel adjustment axes whereby the position of the output shaft can be adjusted;

means for fixing said output shaft in any one of a plurality of positions about said adjustment axes;

means for drivingly coupling the input shaft to the output shaft whereby the input shaft can rotate the output shaft in all positions of the output shaft about the two adjustment axes;

said coupling means includes an input gear coupled to said input shaft, an output gear coupled to said output shaft and an intermediate gear drivingly engaging said input gear and said output gear, and means for mounting said intermediate gear for rotation; and

said intermediate gear being a first intermediate gear and said coupling means includes a second intermediate gear drivingly engaging said input gear and said output gear, means for mounting said second intermediate gear for rotation, a first of said adjustment axes being perpendicular to said first rotational axis, and said two intermediate gears holding the output shaft against pivotal movement about said first adjustment axis.

4,332,148

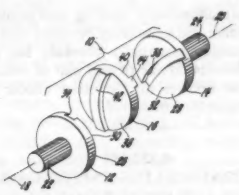
CYCLIC PHASE-CHANGE COUPLING

Emil R. Maki, Rochester, Mich., and Ferdinand Freudenstein, Riverdale, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 4, 1980, Ser. No. 156,321

Int. Cl.³ F16D *3/04*

U.S. Cl. 464—102 **3 Claims**



1. A cyclic phase-change coupling for connecting two bodies for rotation at equal cyclic speeds but providing a phase angle variation during each cycle, said coupling comprising:

first and second members rotatable on offset parallel axes and having opposed ends

an intermediate member axially aligned with the ends,

first arcuate guide means connecting said intermediate member with said first member for limiting their relative lateral motion to a first arcuate curved path, and

second arcuate guide means connecting said intermediate member with said second member for limiting their relative lateral motion to a second arcuate curved path,

said first and second curved paths, as projected axially upon a common transverse plane, intersecting at a point within the lateral boundaries of said intermediate member, the relative angle and curvature of said paths being such as to cause in operation oscillation of said intermediate member relative to each of said first and second members to thereby cause a predetermined cyclic variation in phase angle between said first and second members.

4,332,149

NEEDLE BAR ADJUSTMENT MECHANISM FOR WARP KNITTING MACHINES

Ingo Mayer, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,018

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927335

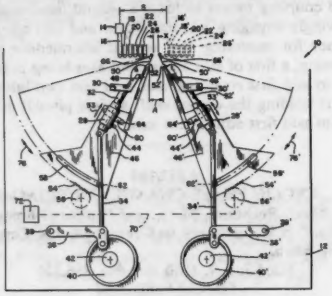
Int. Cl.³ D04B *23/02*

U.S. Cl. 66—87 **6 Claims**

1. A needle bar adjustment mechanism to alter the separation between knockover points on a warp knitting machine having a frame, a pair of needle bars with a plurality of needles affixed

thereon, a trick plate cooperating with each said needle bar, a plurality of guide bars having a plurality of guides affixed thereon and a driving power source operatively coupled to said needle bars and said guide bars, comprising, in combination:

(a) a pair of support members, each said support member having the guiding means for one of said needle bars and said associate trick plate affixed thereon; and



(b) means for simultaneously moving said support members apart to increase the separation between said trick plates, while maintaining essentially constant the distance between said needles on one of said pair of needle bars with respect to the needles on the other needle bar at their uppermost deadpoint of travel.

4,332,150

SYSTEM FOR CONTROLLING KNITTING OR WEAVING MACHINES FOR THE PRODUCTION OF RANDOMLY PATTERNED FABRIC

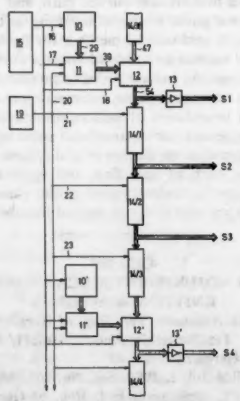
Gerhard Grözinger, Spaichingen, Fed. Rep. of Germany, assignor to SIPRA Patententwicklungs-und Beteiligungsgesellschaft mbH, Stuttgart, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 44,756

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824486

Int. Cl.³ D04B *15/78*

U.S. Cl. 66—232 **12 Claims**



1. In combination with a fabric-producing machine of the type provided with patterning means responsive to pattern-control signals, a patterning system which implements a non-repeating pattern, the patterning system comprising means generating pattern-control signals randomly and comprising a plurality of means each randomly generating pattern-control signals for a different part of the fabric produced and operating independently of one another and each comprising a respective multi-state signal storage means and a respective pulse generator controlling the storage means, the pulse generators operating independently of one another.

4,332,151

APPARATUS FOR HEAT TREATMENT OF SYNTHETIC YARNS AND FIBERS

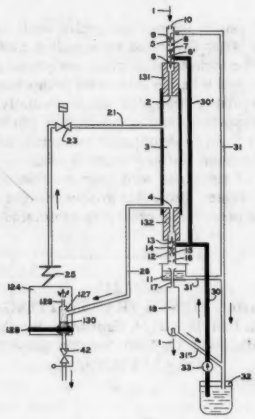
Max Brossmer, Hanau, and Manfred Boerner, Offenbach, both of Fed. Rep. of Germany, assignors to D.I.E.N.E.S Apparatebau GmbH, Muehlheim, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,264

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1980, 3033409

Int. Cl.³ D06B *23/18*

U.S. Cl. 68—5 E **9 Claims**



1. Apparatus for heat treatment of continuously moving synthetic yarns or fibers, characterized as follows:

at least one elongated thermally isolated upright vessel connected to a steam generator having at its upper end an inlet opening and at its lower end an outlet opening for the yarn;

a tube located at each corresponding end of said vessel and outside of said openings and having a corresponding hole therein for allowing said yarn to pass therethrough and through said vessel;

each of said tubes having several apertures in series along the travel path of the yarn;

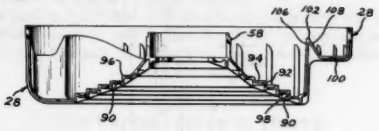
the space between the inlet opening and one of the first two apertures of one of said tubes and between the outlet opening and one of the first two apertures of said other tube is connected to a blocking liquid supply pipe;

the space between said hole and one of said apertures in each tube being connected to a blocking liquid return pipe which ports into a liquid collector tank;

a pump inserted between said collector tank and said blocking liquid supply pipe; and,

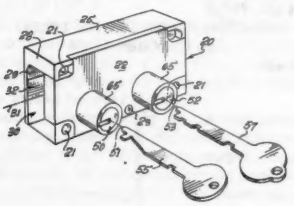
said apertures serving to reduce the pressure of the supplied blocking liquid to almost atmospheric pressure at said holes which allow the yarn to enter and to leave the apparatus.

4,332,152
WASHING MACHINE
John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Oct. 14, 1980, Ser. No. 196,803
Int. Cl.³ D06F 21/06
U.S. Cl. 68—171 9 Claims



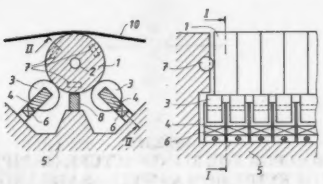
1. In a washing machine for fabric articles comprising a receptacle having a central axis and arranged to receive a washing liquid and a fabric article load to be washed by the liquid, said receptacle including a bottom wall and a side wall, drive means operatively connected to said receptacle, said drive means being constructed and arranged to move said receptacle so that said central axis moves in an orbital path, the improvement comprising:
(a) a plurality of circumferentially spaced ramps extending inwardly from said side wall;
(b) each of said ramps having a surface inclined upwardly in a direction opposite to the direction of orbiting movement of said receptacle; and
(c) a wall at the inner edge of each of said ramps, said wall extending above said surface.

4,332,153
DUAL KEY LOCKS WITH MULTI-FUNCTION TUMBLERS
James M. Miles, 1511 E. Edinger, Santa Ana, Calif. 92705
Filed Jun. 4, 1979, Ser. No. 45,124
Int. Cl.³ E05B 35/12
U.S. Cl. 70—339 16 Claims



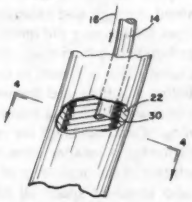
1. A lock which includes bolt means movable along a bolt axis between a locking position and a releasing position and including fence means, at least one set of flat tumblers, means for mounting the tumblers for independent movement transversely of the bolt axis, a gated blocking edge on each tumbler for cooperation with the fence means to normally block bolt movement toward releasing position, and key receiving means for controlling said tumbler movement to align the gates and unblock the bolt movement; said lock being further characterized in that
at least a plurality of said tumblers include a second gated blocking edge facing oppositely to the first said edge,
and said plurality of tumblers have such form that they are receivable by said mounting means in two alternative orientations with a different one of the blocking edges in position in each of the orientations to cooperate with the fence means under key control.

4,332,154
DEFLECTOR ROLL
Jan O. Nordvall, Vesteras, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden
Filed Jan. 30, 1980, Ser. No. 116,998
Claims priority, application Sweden, Feb. 1, 1980, 7900869
Int. Cl.³ B21C 51/00; B21B 37/04, 37/06
U.S. Cl. 72—31 2 Claims



1. A deflector roll assembly for measuring the distribution of tension across the width of a strip passing through a strip mill, the assembly including
a deflector roll over which said strip passes, said deflector roll being formed by a plurality of roll sections rotatably mounted about a relatively weak central shaft and axially positioned in abutting side-by-side relationship,
a foundation means, and
a multiplicity of support means, two of said support means being associated with each roll section and each of said support means, except the two axially outermost ones, supporting two of the abutting roll sections, each support means including two supporting rollers positioned on opposite lower sides of the roll sections to be supported and separate holders stationarily attached to the foundation means to rotatably mount the associated supporting roller, each holder including a magnetostrictive transducer for measuring the forces applied to the respective holder through the respective support roller.

4,332,155
ROLLING MILL LAYING PIPE
David L. Pariseau, Southbridge, Mass., assignor to Morgan Construction Company, Worcester, Mass.
Filed Dec. 18, 1980, Ser. No. 217,892
Int. Cl.³ B21D 11/00
U.S. Cl. 72—66 8 Claims



1. In a rolling mill, a rotatable laying pipe for forming a hot rolled mill product moving longitudinally at high mill delivery speeds into a series of interconnected rings, said laying pipe comprising:
a rigid tube having an entry end through which the product is received and an exit end through which the product is discharged, with an intermediate portion of said tube between said entry and exit ends having a three-dimensionally curved configuration;
a helical spring axially received in said tube, said spring

being relatively tightly wound and having an inside diameter appropriately dimensioned to accommodate passage therethrough of said product, the entire length of said spring being confined against radial movement by the inside diameter of said tube; and

retainer means at the entry and exit ends of said tube for axially confining said spring therebetween.

4,332,156

METHOD FOR THE MANUFACTURE OF PIPES BY MEANS OF EXTRUSION AS WELL AS FOR PROVIDING ONE FLANGE ON AT LEAST TWO PIPES, AND DEVICE TO CARRY OUT THE SAID METHOD

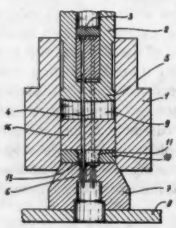
Johannus J. Broodman, Breskens, Netherlands, assignor to B. V. Koninklijke Maatschappij "de Schelde", Vlissingen, Netherlands

Filed Sep. 19, 1979, Ser. No. 76,833

Claims priority, application Netherlands, Sep. 28, 1978, 7809825

Int. Cl.³ B21C *23/14, 27/00, 23/08*

U.S. Cl. 72—264 **3 Claims**



1. Method for making a flanged pipe construction by extrusion, in which there are formed simultaneously at least three pipes integrally connected to a common flange near the center of said flange, by extruding a blank placed in an extrusion space ultimately reaching the volume corresponding to said flange and said extrusion space having openings for said pipes, in which mandrels extend through said extrusion space and said openings for said pipes for forming the interior pipe space and the adjoining flange bores, in which upon extrusion the blank material in the extrusion space is forced to flow from a predetermined distance before reaching said openings for said pipes, axially and radially into and through a transient space located between the beginning of said openings for said pipes and said extrusion space and having a smaller cross section than said extrusion space, such that at the beginning of said openings for said pipes within said transient space all blank material between and around the mandrels is forced to flow mainly in axial direction in a uniform stream towards said openings for said pipes, in which the height of said transient space expressed in millimeters is at least equal to the ratio

$$\frac{80}{\text{(pitch)} - \text{(mandrel diameter)}},$$

but not under 5 millimeters and in which the distance between the side wall of said transient space and the most near mandrel surface is at least equal to the wall thickness of said pipes to be extruded.

4,332,157

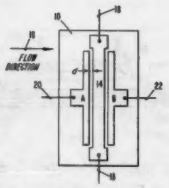
PYROELECTRIC ANEMOMETER

Jay N. Zemel, Jenkintown, and Hamid Rahnamai, Philadelphia, both of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Aug. 29, 1980, Ser. No. 182,683

Int. Cl.³ G01F *1/68;* **G01N** *25/18*

U.S. Cl. 73—26 **17 Claims**



1. A fluid flow rate indicator comprising:

a pyroelectric substrate having at least one surface;

means for applying a fluctuating heat input to said substrate, said input causing a fluctuating surface charge distribution in response to temperature fluctuations of said substrate; and

electrode means on said surface for sensing a fluctuating surface charge on said surface, said charge fluctuations comprising said fluid flow rate indication.

10. A thermal conductivity indicator comprising:

a pyroelectric substrate having at least one surface;

means for applying a fluctuating heat input to said substrate, said input causing a fluctuating surface charge distribution in response to temperature fluctuations of said substrate; and

electrode means on said surface for sensing a fluctuating surface charge on said surface, said charge fluctuations comprising said thermal conductivity indication.

4,332,158

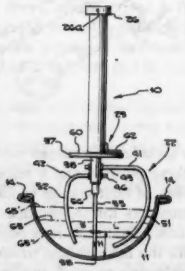
SLUMP TESTING DEVICE

Howard S. Osborne, 1965 Rainbow Ridge, P.O. Box 1691, Corona, Calif. 91720

Filed May 9, 1980, Ser. No. 148,541

Int. Cl.³ G01N *11/14*

U.S. Cl. 73—59 **17 Claims**



1. A manually held device for measuring and indicating slump of flowing concrete being discharged from a concrete mixer along a discharge chute, comprising in combination:

an elongated housing;

an elongated torque responsive member within said housing, one end of said responsive member being fixed to said housing;

a sensing assembly connected to the other end of said torque responsive member within said housing for rotation about

the axis of said torque responsive member and extending beyond said housing;

said sensing assembly beyond said housing including at least two diametrically opposite sensing members of different size adapted to produce torque forces of different direction and magnitude when said sensing assembly is inserted into said flowing concrete, the resultant of said forces being transmitted to said torque responsive member;

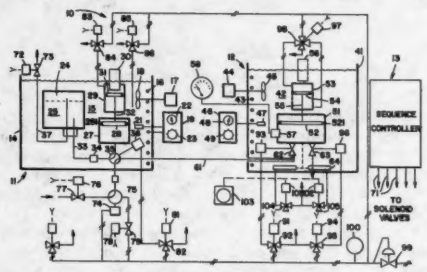
an indicator element on said housing;

and indicia associated with said sensing assembly and movable relative to said indicator element in response to the resultant of said forces to show measurement of slump.

4,332,159
REID VAPOR PRESSURE TESTER

Thomas G. Chin, and Arthur Alston, both of El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 29, 1980, Ser. No. 182,365
Int. Cl.³ G01N 7/16
U.S. Cl. 73—64.2 **20 Claims**



1. An apparatus for determining the Reid Vapor Pressure of normally liquid hydrocarbon materials comprising:

(a) a first compartment maintained at a substantially fixed temperature in the range of 32° F. to 40° F.,

(b) a second compartment maintained at a substantially fixed temperature of 100° F.,

(c) a sample storage container and a sample cylinder within said first compartment, and means connecting said storage container and said sample cylinder for transferring a sample of said liquid hydrocarbon material from said storage container to said sample cylinder,

(d) a measuring cylinder within said second compartment, and means connecting said measuring cylinder to said sample cylinder in said first compartment for transferring a metered quantity of said sample of said liquid hydrocarbon from said sample cylinder to said measuring cylinder,

(e) pressure sensor means associated with said measuring cylinder for measuring the pressure within said measuring cylinder,

(f) and means for displaying said measured pressure as the vapor pressure of said sample of liquid hydrocarbon fuel.

4,332,160
PENETROMETER

Harold A. Baragar, 311 Wascana Rd. SE., and Kenneth S. Toovey, 5947 Dalhousie Dr. NW., both of Calgary, Alberta, Canada

Filed Apr. 7, 1980, Ser. No. 137,985
Claims priority, application Australia, Apr. 19, 1979, PD8473
Int. Cl.³ G01N 3/00
U.S. Cl. 73—84 **19 Claims**

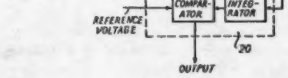
18. A load cell component for use with a penetrometer assembly comprising in combination a housing and a strain gauged stud mounted therein for activation by tension or compression forces acting thereon, said housing including an upper end portion, a central sleeve portion connected to the lower end of said upper end portion and a separate, independent lower end portion slidably engageable within the lower

end of said central sleeve portion, said strain gauged stud being operatively connected between said central sleeve portion and said lower end portion.

4,332,161
ACOUSTIC DETECTION OF TOOL WEAR AND FRACTURE

Yoshiaki Kakino, Kyoto, Japan, assignor to NL Circuit Design Block Co., Ltd., Japan

Filed Jan. 29, 1980, Ser. No. 116,509
Claims priority, application Japan, Jan. 31, 1979, 54-010107
Int. Cl.³ G01N 19/00
U.S. Cl. 73—104 **4 Claims**



4. An acoustic emission monitoring system, for detecting brittle fracture and wear of a tip of a cutting tool, comprising:

(i) means for converting acoustic emission into an electric signal;

(ii) a high-pass filter for rejecting frequency components in said signal lower than a frequency selected in the range 50 kHz to 300 kHz inclusive,

(iii) means for detecting the amplitude of said signal after rejecting said frequency components,

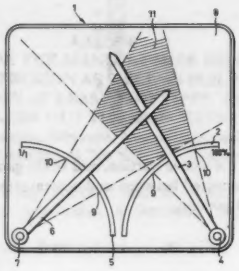
(iv) means for integrating the detected amplitude, and

(v) means for comparing the integrated amplitude with a predetermined reference amplitude.

4,332,162
DEVICE FOR INDICATING THE ECONOMICAL OPERATING RANGE OF AN ENGINE

Hellmut Garthe, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Aug. 26, 1980, Ser. No. 181,627
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1979, 2934839
Int. Cl.³ G01M *15/00;* G01L *5/13*
U.S. Cl. 73—117.3 1 Claim



1. A device for indicating the economical operating range of an internal combustion engine, said device comprising in combination:

a housing;

a first indicating element, in said housing, for indicating the speed of said internal combustion engine at any given moment;

a second indicating element, in said housing, for indicating the load condition of said internal combustion engine at any given moment;

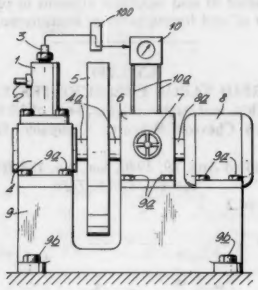
a respective measured-value scale for each of said indicating elements, said scales being located in a common plane and each having a lower limit value and an upper limit value indicated thereon, said limit values being dependent upon the characteristic of the internal combustion engine being measured, said limit values defining the economical operating range of said internal combustion engine as a function of the parameter being measured; and

a respective indicator needle for each of said indicating elements, each needle being rotatable about a respective pivot axis for movement over an associated measured-value scale, said economical operating range being a common tolerance field comprising a surface beyond said measured-value scales, and being defined by straight lines which extend from said pivot axes of said needles through the associated lower and upper limit values on the respective measured-value scale, said needles being of such a length, and being arranged at such a height, that they intersect in said economical operating range readily monitored in common so that said needles, cross each other in a common tolerance field to eliminate need to monitor and read two indicators and two separate scales, said economical operating range having a predetermined color which differs from that of said common plane of said scales and that of said indicator needles so as to be set off therefrom, only one glance being required to determine whether both needles are located within the tolerance field associated therewith and to observe whether both needles cross each other in the field which is distinguished by the predetermined color.

4,332,163
CAM BOX ASSEMBLY

Reginald S. Emerson, Buckingham, England, assignor to Leslie Hartridge Limited, Buckingham, England

Filed Jun. 24, 1980, Ser. No. 162,664
Claims priority, application United Kingdom, Jun. 29, 1979, 7922651
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—119 A 3 Claims

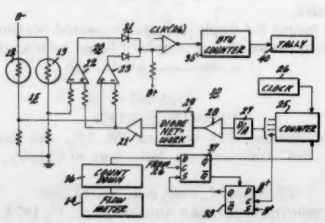


1. A cam box assembly, especially for use with machines for testing fuel injection pumps, comprising a cam box, a cam shaft in said cam box, drive transmission means connected to said cam shaft, a first rotatable shaft drivingly connected to said drive transmission means, a second rotatable shaft drivingly connected to said drive transmission means, a first flywheel mounted on said first shaft, and a second flywheel mounted on said second shaft and of identical mass to said first flywheel, said two shafts being co-axial with each other and being arranged to rotate in opposite directions by reason of their connection with said drive transmission means whereby said flywheels likewise rotate in opposite directions, and said drive transmission means comprising a slow-speed output formed by a crown wheel and two higher-speed inputs formed by opposing, spaced-apart, coaxial bevel pinions arranged to rotate in opposite directions and carried on said two contra-rotating shafts.

4,332,164
BTU METER

Robert J. Schlesinger, 18645 W. Hatteras, Tarzana, Calif. 91356, and Patrick J. Keegan, 8711 Haskell St., Sepulveda, Calif. 91343

Filed Oct. 29, 1979, Ser. No. 89,528
Int. Cl.³ G01K *17/16*
U.S. Cl. 73—193 R 5 Claims



1. A BTU meter for measuring the amount of energy absorbed or dissipated by a device for any length of time, said device having a collector, the collector being flown through by fluid, said meter comprising:

first temperature-sensing means disposed and connected to

provide a first signal representing the temperature of the fluid flow into the device;

second temperature-sensing means disposed and connected to provide a second signal representing the temperature of the fluid flow out of the device;

flow-sensing means disposed to provide a pulse each time a particular quantity of fluid as flown through a flow path which includes the device;

a ramp generator providing a sweep signal and being connected for being triggered by each of said pulses;

first and second comparators, both being connected to the ramp generator to receive therefrom the sweep signal as a reference signal and said first and second comparators further connected respectively to said first and second temperature-sensing means;

logic gate means connected for combining outputs of the first and second comparators as produced by them to generate an enabling signal for a period of time in which the sweep signal sweeps through levels representing temperatures between said temperatures, respectively represented by the first and second signals;

clock-pulse-generating and providing means; and

means connected to the clock pulse means and to the logic gate means, to count clock pulses during each enabling signal and to, cumulatively, tally the result of the counting.

4,332,165

GAS FLOW MEASURING DEVICE

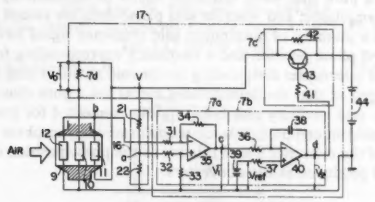
Hisasi Kawai, Toyohashi; Tsuneyuki Egami, Aichi; Tokio Kohama, Nishio, and Hideki Obayashi, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 7, 1979, Ser. No. 92,024

Claims priority, application Japan, Nov. 10, 1978, 53-139142; Nov. 13, 1978, 53-140186

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—204 **3 Claims**



1. A gas flow measuring device comprising:

a flow rate measuring pipe disposed within a conduit for a gas whose flow rate is to be measured, said flow rate measuring pipe defining a single gas passage extending in the axial direction of said conduit;

a first temperature dependent resistor, and electric heater and a second temperature dependent resistor disposed within the single gas passage defined by said flow rate measuring pipe and along the flow of the gas within said single gas passage, said electric heater being located between said first and second temperature dependent resistors; and

a measuring circuit connected to said first and second temperature dependent resistors and to said electric heater to generate an output voltage indicative of the flow rate of the gas depending on the resistance values of said first and second temperature dependent resistors;

said measuring circuit including a first reference resistor and a second reference resistor constituting a bridge circuit together with said first and second temperature dependent resistors; a first differential amplifier circuit connected to said bridge circuit for the amplification of the potential difference between the potentials at the diagonal points of said bridge circuit; a second differential amplifier circuit connected to said first differential amplifier circuit for the amplification of the difference between the amplified output voltage of said first differential amplifier circuit and a predetermined reference voltage; a power amplifier connected to said second differential amplifier circuit for the power amplification of the amplified output voltage of said second differential amplifier circuit; an output resistor connected to said power amplifier and to said electric heater to provide thereacross said output voltage the third power of which is proportional to the flow rate of the gas subjected to the flow rate measurement; and a heat circuit connected to said electric heater, to said output resistor and to said power amplifier to disable said power amplifier depending on the resistance value of said electric heater.

4,332,166

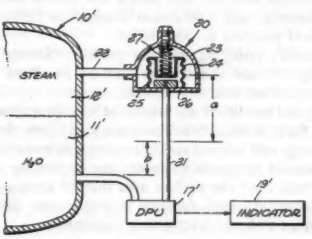
TEMPERATURE COMPENSATION APPARATUS FOR A LIQUID FILLED CONDUIT

Victor N. Lawford, Pasadena, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 8, 1980, Ser. No. 176,466

Int. Cl.³ G01F *23/14*

U.S. Cl. 73—299 **17 Claims**



1. A temperature compensated fluid link comprising: fluid tight housing means providing a chamber, said housing means having an inlet to admit fluid under pressure to the interior of said chamber, said housing means having one wall and an opening extending through said one wall; a conduit having first and second ends, said first end of said conduit being sealed through said opening in a liquid tight manner; a bellows having a free end and a lip at an opposite end, said lip being sealed to a side of said one wall inside said chamber around and spaced from said chamber opening; a spring supported in said chamber in a manner to apply a force to said bellows free end as a function of the expansion and contraction of said bellows relative to said opening; pressure sensitive means providing a liquid tight closure of said second conduit end; and an incompressible liquid filling said bellows and said conduit, said incompressible liquid having an expansion which is a predetermined function of temperature, said spring having a force constant of a magnitude sufficient to cause the pressure in said conduit at said pressure sensitive means to be constant not only when the pressure outside said bellows but inside said chamber is constant, but also when the temperature of said liquid varies a predetermined extent anywhere within a predetermined range.

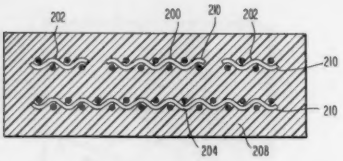
4,332,167
METHOD OF MAKING AN RF ADMITTANCE MEASURING PROBE AND PRODUCT THEREOF

Robert J. Sun, Bala Cynwyd, and Frederick L. Maltby, Jenkintown, both of Pa., assignors to Drexelbrook Controls, Inc., Horsham, Pa.

Continuation of Ser. No. 635,595, Nov. 28, 1975, abandoned, which is a continuation-in-part of Ser. No. 532,208, Dec. 12, 1974, Pat. No. 4,064,753. This application Mar. 21, 1979, Ser. No. 22,456

Int. Cl.³ B29C *27/30*; B29D *3/00*; G01F *23/26*

U.S. Cl. 73—304 C **14 Claims**



1. An RF probe for measuring liquid levels made by an improved method comprising the following steps:

applying sheets of thermoplastic insulation material to the exterior of a probe electrode comprising a wire mesh having a plurality of openings extending therethrough such that said sheets extend substantially laterally outwardly beyond the lateralmost extremities of said probe electrode and beyond the end of said probe electrode;

locating the sheets and electrode within an air tight chamber having a diaphragm pressing member;

substantially evacuating said chamber of air including any air present between said sheets and within said openings and beyond said lateralmost extremities before applying uniform pressure to said sheets;

subsequently applying uniform pressure through said diaphragm to said sheets after said air has been evacuated from between said sheets; and

heating said insulation material to at least its melting point so as to form a fusion bond between said sheets through said openings and beyond said lateralmost extremities whereby substantial compressive forces are applied to said probe electrode over the surface area thereof upon cooling, the insulation material forming a continuum through said openings and said lateralmost extremities.

4,332,168
RADIOMETER

Claus Aberle, Mannheim; James F. Ruger, Hoffenheim, and Klaus-Peter Schulz, Heidelberg, all of Fed. Rep. of Germany, assignors to Eltro GmbH, Heidelberg, Fed. Rep. of Germany

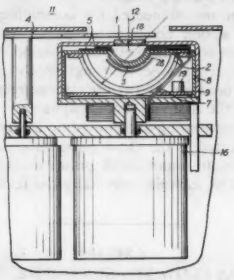
Filed Apr. 16, 1980, Ser. No. 140,796

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915971

Int. Cl.³ G01J *1/56*

U.S. Cl. 374—130 **2 Claims**

1. A radiometer for measuring heat radiating from a defined spacial area, comprising a hollow mirror shaped to resemble a segment of a sphere and mounted for turning movement about its optical axis; a plurality of photoelectric convertors mechanically coupled with said mirror and arranged in the path of rays reflected by the same; a turntable interruptor disk interposed ahead of said mirror in the path of incident radiation and having a reflecting side facing towards the mirror; means for producing a reference signal which is coupled in phase-locked relationship with the rotation of said disk; heating means for heating said convertors; a housing surrounding said mirror, said convertors and said heating means and having a wall located ahead of said mirror and provided with an incident-light window located on said optical axis inwardly of said interruptor disk and arranged on the center of curvature of said mirror; and circuit means comprising amplifiers connected to receive signals from said convertors, a rectifier circuit including a phase-detector circuit controlled by said reference signal and a low-pass filter circuit receiving signals from said rectifier circuit, threshold value comparators and a multiplexer operative to sequentially supply the rectified signals to said threshold value comparators; said reference-signal producing means comprising an auxiliary disk coupled in phase-locked relationship with said interrupter disk and provided with reference indicia, and a detector responding to said reference indicia by producing said reference signal; said interrupter disk including a drive having a rotary drive shaft, and said auxiliary disk being mounted on said drive shaft for rotation therewith; said auxiliary disk being of transparent material and said indicia



being constituted by opaque portions of said auxiliary disk for coding, said detector having an electric eye circuit a light beam of which is interrupted by said opaque portions during turning of the auxiliary disk; an amplifier/limiter and a demodulator connected in circuit subsequent to said detector so as to produce a pure sine-wave reference signal of substantially constant amplitude; and wherein said phase-detector circuit comprises a plurality of multipliers; said reference signal having a defined phase position and a frequency corresponding to that of said interrupter disk; coding on the said auxiliary disk being arranged so that the demodulated signal has a pure sine-wave shape, said auxiliary disk being rigidly connected for rotation with said interrupter disk for predetermining the phase position of the reference signal relative to the phase position of the signal produced at the converters.

4,332,169
SPEED NUT FOR A WHEEL BALANCER

Robert J. Stuart, Murfreesboro, Tenn., assignor to Hennessy Industries, Inc., Elk Grove Village, Ill.

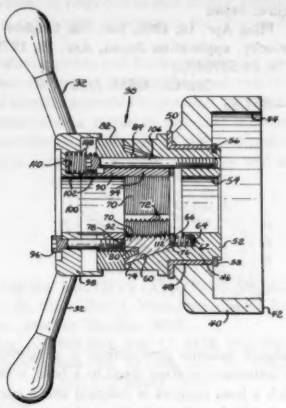
Filed Jun. 16, 1980, Ser. No. 159,816

Int. Cl.³ G01M *1/02*

U.S. Cl. 73—487 **5 Claims**

1. A wheel balancer including: a threaded shaft having a free end for receiving a wheel to be balanced; means for rotating the shaft with a wheel secured thereon so as to enable the obtaining of data relative to unbalance of the wheel as the wheel rotates; a locating device for engaging a wheel on the shaft and for locating the wheel on the shaft; and nut means receivable on said shaft for holding a wheel thereon and against said locating device, said nut means including nut threads for engagement with the threads on said shaft, means for selectively moving said nut threads radially inwardly into engagement with said shaft threads and outwardly out of engagement with said shaft threads, whereby said nut means may be rapidly advanced on or removed from said shaft without rotation when said nut threads are out of engagement with said shaft threads, said selective moving means comprising means normally moving said nut threads radially outwardly and cam means operable to move said nut threads radially inwardly; said locating device being biased toward said free

end and said cam means including a ramp-like surface slidably receiving said nut threads and at an angle to the axis of said shaft less than the angle of the faces of said threads to a plane



at right angles to said axis; and manual means for sliding said nut thread on said surface to cause the same to be cammed radially inwardly.

4,332,170

SUB-ASSEMBLY FOR DETECTING LEAKS OF A LIQUID METAL

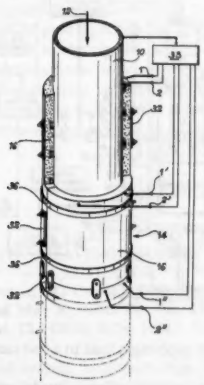
Michel Belval, Volx; Chantal Casselman, Manosque; Jean-Claude Malet, Venelles; Christian Prats, Versailles, and Jean Meneret, Sevres, all of France, assignors to Commissariat a l'Energie Atomique, Paris and Carbonisation Entreprise et Ceramique (C.E.C.), Montrouge, both of, France

Filed Apr. 29, 1980, Ser. No. 144,915

Claims priority, application France, May 3, 1979, 79 11142

Int. Cl.³ G01M *3/08*

U.S. Cl. 73—40.5 R **15 Claims**



1. A sub-assembly for detecting leaks of a liquid metal contained in a component, comprising electrically conductive elements (22) arranged inside an electrically insulating material, wherein said insulating material consists of a rigid shell (18) the inner surface of which is adapted to the outer surface of said component (10), whilst open grooves (20) are formed on the inner surface of the shell for receiving said electrically conductive elements (22), the grooves (20) having a widened portion (26) remote from the inner surface of the shell, receiving the electrically conductive elements, and a portion of reduced width (24) located between the widened portion and the inner surface of the shell and maintaining the electrically conductive elements (22) at a spacing from said inner surface.

4,332,171

ULTRASONIC DIAGNOSIS APPARATUS

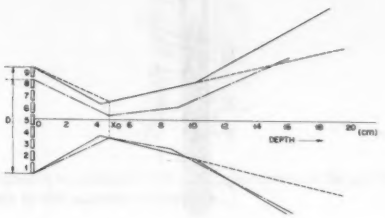
Taketoshi Iida; Kazuyoshi Saito; Toshio Shrasaka, and Yasuhiko Takemura, all of Tochigi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 3, 1980, Ser. No. 165,622

Claims priority, application Japan, Jul. 11, 1979, 54-86866

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—626 **5 Claims**



1. An ultrasonic diagnosis apparatus comprising:

a plurality of transducer elements arranged at least in a row,

means for generating a system pulse signal,

means for controlling the number of simultaneously driven transducer elements,

said controlling means including means for storing delay time data for said simultaneously driven transducer elements to maintain the minimum width position of ultransonic beams which said simultaneously driven transducer elements transmit toward and receive from an object under examination substantially constant irrespective of the change of the number of said simultaneously driven transducer elements, electronic focusing means including delay elements for adjusting the focal point of the ultransonic beams in accordance with the delay time data read out from said storing means in order for the minimum width position of the ultrsonic beams to be substantially constant,

means for providing said simultaneously driven transducer elements with an output of said electronic focusing means,

means for detecting the ultrasonic beams received by said simultaneously driven transducer elements, and

means for displaying the detected ultrasonic beams in response to the system pulse.

4,332,172

DEVICE FOR DETERMINING THE PORE WATER PRESSURE IN A SOIL

Bengt-Arne Torstensson, 34 Höjdvägen, Vallentuna, Sweden (S-186 00)

PCT No. PCT/SE79/00117, § 371 Date Jan. 7, 1980, § 102(e) Date Jan. 7, 1980, PCT Pub. No. WO79/01099, PCT Pub. Date Dec. 13, 1979

PCT Filed May 22, 1979, Ser. No. 177,761

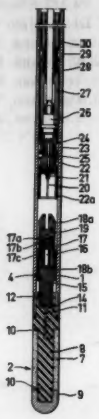
Claims priority, application Sweden, May 22, 1978, 7805815

Int. Cl.³ G01L *11/00*

U.S. Cl. 73—707 **11 Claims**

1. A device for determining the pore water pressure in a soil comprising a water-filled tube, a pore pressure sound at the bottom end of the tube having a filter, a measuring device with a pressure meter, means for connecting the measuring device to the pore pressure sound, cable means for connecting the measuring device to a recording means, the means for connecting the measuring device to the pore pressure sound comprises

a hypodermic needle and a member of a resilient material, whereby to record a reading of the pore water pressure the hypodermic needle penetrates said member of resilient material, and damping means arranged on the pore pressure sound



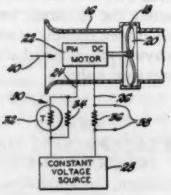
below said member for absorbing the effects of a momentary volume change in the pore pressure sound occurring during penetration of the needle through the resilient member, said damping means including a confined gas.

4,332,173

FAN TYPE MASS AIRFLOW METER

Daniel C. MacManus, Owosso, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 9, 1980, Ser. No. 157,391
Int. Cl.³ G01F *1/78*
U.S. Cl. 73—861.89 **6 Claims**



1. A mass airflow meter for measuring the mass airflow through a duct comprising

a fan in the duct,

a permanent magnet D.C. motor coupled to the fan for driving the fan,

supply means for supplying a substantially constant voltage to the motor for operation of the motor at a speed depending on the mass airflow, wherein the motor current varies substantially inversely with fan speed, and

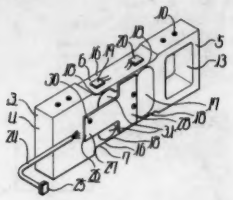
current sensing means connected to the supply means for providing an output signal proportional to the motor current to provide a substantially linear measure of mass airflow.

4,332,174

LOAD-CELL BALANCE

Seiji Suzuki; Kohichiro Sakamoto, and Tohru Kitagawa, all of Shizuoka, Japan, assignors to Tokyo Electric Company, Limited, Meguro, Japan

Filed Apr. 14, 1980, Ser. No. 139,644
Claims priority, application Japan, Apr. 19, 1979, 54-47243; Apr. 20, 1979, 54-53784[U]
Int. Cl.³ G01L *1/22*
U.S. Cl. 73—862.65 **8 Claims**



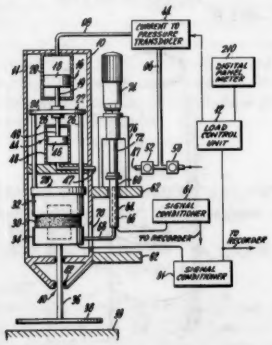
1. A load-cell balance comprising: a parallelogram beam including a stationary portion fixed to a base, a movable portion to which a load support is coupled and a pair of parallel arms through which said stationary and movable portions are connected to each other at their upper and lower ends, said arms having flexible portions; strain gauges adhered to said flexible portions; and a printed circuit board to which a wiring pattern for said strain gauges is adhered, said printed circuit board extending along the length of said beam and being fixed at one end to said stationary portion.

4,332,175

COUNTERBALANCE LOADING DEVICE

Theodore J. Krainski, Jr., Old Bridge, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed May 12, 1980, Ser. No. 149,221
Int. Cl.³ G01N *3/10*
U.S. Cl. 73—825 **7 Claims**



1. Apparatus for applying a load to a test sample comprising:

a housing;

a first cylinder rigidly affixed inside said housing and adapted to receive a first supply of fluid under pressure;

a first piston slidably mounted in said first cylinder and moveable in response to said first pressurized fluid supply;

a first piston rod connected to said first piston to transmit the force supplied to said first piston out of said first cylinder;

a load transfer assembly disposed within said housing having a first end rigidly affixed to said first piston rod and having a second end affixed to an output shaft so that said output shaft will move together with said first piston;

a counterbalance cylinder rigidly affixed within said housing

and adapted to receive a second supply of fluid under pressure and having a piston slidably mounted therewithin and moveable in response to said second pressurized fluid supply in a direction opposite to the motion of said first piston;

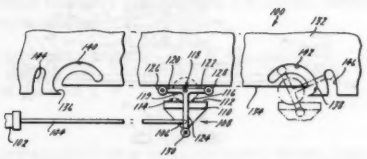
a counterbalance piston rod having a first end connected to said counterbalance piston and a second end connected to said load transfer assembly to transmit the force applied to said counterbalance piston to said load transfer assembly to counterbalance the weight of said first piston rod, said first piston, said load transfer assembly and said output shaft.

4,332,176

MECHANICAL MOTION CONTROL APPARATUS

Norbert Rust, St. Clair Shores, Mich., assignor to Expert Automation, Inc., Sterling Heights, Mich.

Division of Ser. No. 868,889, Jan. 12, 1978, Pat. No. 4,224,830.
This application Feb. 7, 1980, Ser. No. 119,307
Int. Cl.³ F16H *25/00*
U.S. Cl. 74—110 **6 Claims**



1. Mechanical motion control apparatus comprising:

drive means;

driven means driven by said drive means, said driven means including a gear; and

movement control means including cam follower means secured to said gear and engageable with a camming surface, said cammng surface being contoured so as to allow a period of pure rotational movement of said driven means, a period of decelerating rotational and simultaneous accelerating linear movement of said driven means and a period of constant velocity linear movement of said driven means relative to said drive means while said drive means continuously moves at a substantially constant velocity.

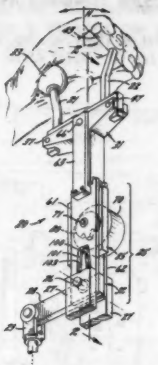
4,332,177

CONTROL SYSTEM HAVING SQUEEZE TYPE MANUAL ACTUATOR

Herman J. Andresen, 712 Carriage Hill, Glenview, Ill. 60025

Filed May 30, 1980, Ser. No. 154,802
Int. Cl.³ G05G *9/04;* H01C *10/00*
U.S. Cl. 74—491 **29 Claims**

1. In a control system, a squeeze type manual controller comprising, in combination, a control arm, a mount providing a movable connection therefor, a pair of hand grips extending longitudinally from the upper end of the arm, the hand grips being pivoted to the arm for rocking movement about parallel axes, the hand grips having respective pads at their outer ends and having a normal spacing in which the pads are engageable by the palm and fingertips of one hand, a central plunger mounted for reciprocating movement in said arm and having a return spring, means for coupling both of the hand grips to the plunger so that squeezing of the hand grips together causes the plunger to move downwardly against the force of the return spring, means at the lower end of the plunger and coupled thereto for producing a first output signal in accordance with plunger displacement, and means for producing a second out-



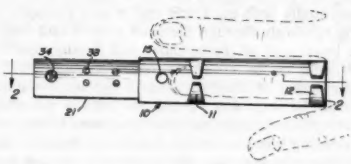
put signal in accordance with the displacement of the arm with respect to the movable connection.

4,332,178

EXTENDIBLE FINGER WRENCH

John Vukich, 6500 E. 88th Ave. #186, Henderson, Colo. 80640

Filed Aug. 21, 1980, Ser. No. 180,049
Int. Cl.³ B25B *15/00*
U.S. Cl. 81—439 **7 Claims**



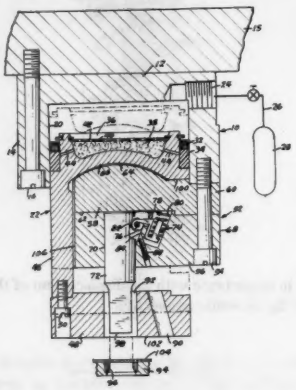
1. A tool set adapted to be used for removing and replacing connections in areas of limited accessibility comprising an elongated transversely arcuate rigid base member with side channels extending along both elongated edges, first stop means on the base member near its forward end, and a set of interchangeable tool carrying members each adapted to be carried individually on the said base member and comprising an elongated rigid member concentrically arcuate with the base member so as to be able to slide onto the base member with the side edges of the tool carrying member slideably engaged within the said side channels, a second cooperating stop means near the back end of the tool carrying member, a different tool element mounted at the forward end of each tool carrying member, the said first stop means and the said second stop means adapted to abut when the base member and the tool carrying member are at their maximum extension, frictional gripping means on the base member to hold the tool carrying member at any point along the length of the base member so as to provide a tool of optionally varying length, said frictional gripping means comprising a bowed tension spring extending parallel to the length of the base member and secured to it at each of its ends, said spring having an opening at one end to allow room for the flattening of the spring when the tool carrying member rides over it.

4,332,179

COMBINED PUNCH RETAINER AND FLUID-ACTUATED STRIPPER

Bernard J. Wallis, 25200 Trowbridge Ave., Dearborn, Mich. 48124

Filed Oct. 8, 1980, Ser. No. 194,996
Int. Cl.³ B21D *45/08*
U.S. Cl. 83—137 **2 Claims**



1. A combined punch retainer and fluid-actuated stripper comprising a fluid cylinder adapted to be mounted on a vertically reciprocating die member for movement therewith, said cylinder having a vertical bore therein, said bore being open at its lower end and having an inlet port adjacent its upper end, a piston arranged for vertical reciprocation in said bore, a punch retainer at the lower open end of said cylinder, said punch retainer having a plurality of circumferentially spaced, radially outwardly extending fingers, the outer ends of which register circumferentially with the lower end of said cylinder, screws extending upwardly through the outer ends of said fingers and into the lower end of the cylinder and fixedly securing the punch retainer on the lower end of the cylinder, said piston having a plurality of integrally formed legs thereon extending downwardly between and beyond the radially extending fingers on the punch retainer, said punch retainer having a downwardly opening bore therein for receiving a punch, a stripper plate transversely spanning the lower ends of said legs and having an opening therein for accommodating said punch and screws extending upwardly through the outer peripheral portion of said stripper plate and into the lower ends of said legs for fixedly mounting the stripper plate on said legs, said fingers and legs being interengaged to prevent relative rotation between the stripper plate and the punch.

4,332,180

RESAW APPARATUS

Allard R. Johnson, 909 W. Birch, Shelton, Wash. 98584

Filed Nov. 9, 1979, Ser. No. 93,006
Int. Cl.³ B27B *5/00*
U.S. Cl. 83—872 **1 Claim**

1. Resaw apparatus comprising:

an elongated horizontal conveyor in the form of an endless belt for receiving and supporting boards in a horizontal position lengthways of said belt with a broad side of each board down,

means for supporting said endless belt to position its upper face at a predetermined reference level, said supporting means comprising an elongated beam member immediately adjacent and underneath the upper reach of said endless belt along which the upper reach of said belt slides for establishing the reference level of said belt,

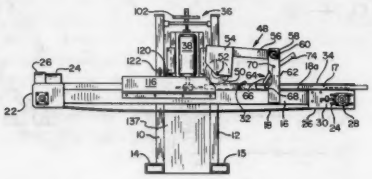
said beam being provided with a pair of stationary and substantially planar side guards positioned in upstanding, parallel, facing relation on either side of said belt to form a board receiving channel together with said beam and said belt within which boards are received,

a circular saw located along said belt,

and means for moving said belt in a longitudinal direction for moving said boards lengthways into said circular saw,

said circular saw having a blade extending transversely above the upper reach of said endless belt, said blade being positioned at a level for cutting a board transversely with respect to the upper face of said belt as a reference level while said belt urges said board lengthways within said channel into said saw blade beginning with one end of said board, said blade extending completely across said channel with each of said side guards having an aperture in alignment with said blade for receiving said blade adapting a board to slidably engage one of said side guards while being cut,

and a gravity operated wheel proximate the position of said saw for bearing on the top surface of a board as received in said channel for holding said board in a direction downwardly toward the upper face of said belt,



said apparatus including a substantially upstanding arbor for supporting said saw blade and power means for rotating said arbor, said power means comprising a motor positioned above the level of the upper reach of said belt and having a shaft extending downwardly to which said arbor is secured,

said apparatus further including a base plate to which said motor is attached and a tiltable mounting plate slidably receiving said base plate in vertically adjustable position for adjusting the depth of cut of said saw relative to said belt,

said apparatus having a frame,

said mounting plate being provided with pivoting means proximate the lower end thereof journaled for pivoting said mounting plate upon said frame about an axis parallel to said board receiving channel and disposing said mounting plate and said base plate in generally parallel relation to said board receiving channel,

and means on said frame above said pivoting means for releasably securing said mounting plate in a selected angular position for disposing said saw blade in selected angular position for making angular cuts in boards received in said channel.

4,332,181

ELECTRONIC MUSICAL INSTRUMENT WITH MEANS FOR SELECTING TONE CLOCK NUMBERS

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer, Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 863,409, Dec. 22, 1977, abandoned.
This application Dec. 13, 1979, Ser. No. 103,037
Claims priority, application Japan, Dec. 24, 1976, 51-155121
Int. Cl.³ G10H *5/07*
U.S. Cl. 84—1.01 **5 Claims**

1. Apparatus for use in an electronic musical instrument for selecting one of a plurality of tone clock numbers, comprising:

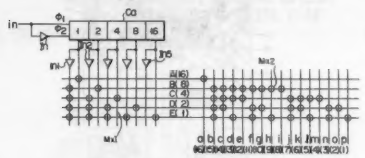
means for generating reference clock signals;

binary counting means coupled to said clock signal generating means and including a plurality of stages for binary-

counting the reference clock signals from said clock signal generating means;

a plurality of output lines;

means for delivering on each of said plurality of output lines a respective output signal representing the logical product of a signal from a respective stage of said binary counting means and an inverted signal from each stage of lower order than said respective stage;



tone clock number selection means coupled to said output lines for selecting at least one of said output lines to obtain an output clock number corresponding to one of twelve different tone clock frequency signals respectively representing twelve different tones, any two adjacent tone clock frequency signals having a frequency difference of substantially $\sqrt[12]{2}$.

4,332,182

APPARATUS FOR TRANSPOSING PASSAGES IN ELECTRONIC MUSICAL INSTRUMENTS

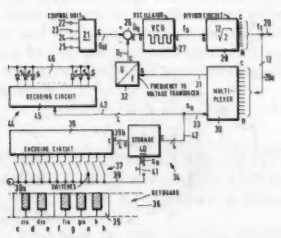
Reinhard Franz, Tulpenstrasse 15, D-5401 Emmelshausen, Fed. Rep. of Germany, and Wilfried Dittmar, Halsenbach, Fed. Rep. of Germany, assignors to Reinhard Franz, Emmelshausen, Fed. Rep. of Germany

Filed Jan. 6, 1981, Ser. No. 222,895

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1980, 3000704

Int. Cl.³ G10H *1/20, 5/06*

U.S. Cl. 84—1.01 **28 Claims**



1. In an electronic musical instrument, a transposing apparatus comprising a voltage-regulated main generator having input means for regulating signals and output means for transmission of high-frequency signals; a divider circuit having input means connected with said output means and output means arranged to transmit tone frequency signals; an electronic switching unit having output means for transmission of regulating signals to the input means of said main generator, said switching unit having a plurality of inputs; and an addressing unit for transmitting addressing signals to the inputs of said switching unit, said addressing unit including a keyboard having a plurality of keys actuatable by the player of the instrument to effect the generation of addressing signals, one for each input of said switching unit.

4,332,183

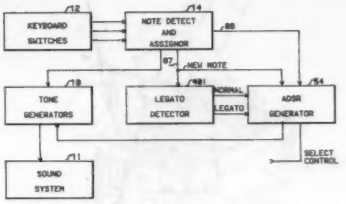
AUTOMATIC LEGATO KEYING FOR A KEYBOARD ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Sep. 8, 1980, Ser. No. 184,707

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.26 **10 Claims**



1. In combination with a keyboard operated electronic musical instrument having keying means comprising an array of keyswitches operable between actuated and released states, apparatus for producing musical tones having tone envelopes responsive to the time intervals between successive actuated states of the keyswitches comprising:

a detection means for detecting state changes of said keying means,

a plurality of tone generators for providing musical waveshape signals,

an assignor means responsive to said detection means for selecting members of said plurality of tone generators,

an interval measuring means responsive to said detected state changes, whereby a time interval number is generated corresponding to the elapsed time between successive actuated states of keyswitches in said array of keyswitches,

an interval detection means responsive to said time interval number wherein a plurality of control signals are generated,

an envelope function generator responsive to said plurality of control signals for generating tone envelope functions, and

a multiplier means wherein said musical waveshapes provided by said selected members of said plurality of tone generators are multiplied by said tone envelope function.

4,332,184

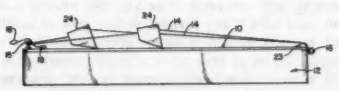
STRINGED MUSICAL INSTRUMENT HAVING A BRIDGE SECURED TO AND TRANSLATABLE ALONG A STRING

Peter Phillips, 189 Sackett St., Brooklyn, N.Y. 11231

Filed Nov. 18, 1980, Ser. No. 207,943

Int. Cl.³ G10D *1/00, 3/04*

U.S. Cl. 84—173 **7 Claims**



1. A stringed musical instrument having a string, a sounding box including a sounding board, means for anchoring the ends of said string, means for providing tension in said string, a self-supporting bridge resting on said sounding board for engaging with and supporting said string, said bridge translatable along said string, and said bridge provided with two edges meeting to form a corner, and wherein said bridge contacts said sounding board through the bridge corner only.

4,332,185

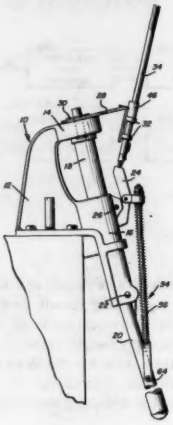
RELOADING PRESS PRIMING ARM LOADER AND ACTUATOR

Jasper E. Hargrove, 2012 Alice St., Waycross, Ga. 31501

Filed Apr. 22, 1980, Ser. No. 142,768

Int. Cl.³ F42B *33/10*

U.S. Cl. 86—36 **8 Claims**



1. In combination with a reloading press of the type including a base and a shell holder reciprocal relative to the base between a first die sizing position and a second primer press position, a handle oscillatable relative to the base between first and second positions and connected to the shell holder for movement of the shell holder to the first and second positions thereof responsive to movement of the handle to its first and second positions, respectively, a primer arm oscillatable relative to the base between a first primer pickup position and a second primer positioning position, a primer tube supported from the base for feeding successive primers to said primer arm as said arm is successively moved to the first position thereof, yieldable lost motion connecting means operatively connecting said handle to said primer arm for swinging the latter to its first and second positions responsive to movement of said handle to its first and second positions, respectively.

4,332,186

HYDRAULIC ACTUATOR FOR LATHE CHUCK

Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,772

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 7932853[U]

Int. Cl.³ F01B *31/12*; F15B *13/02*; B23B *31/24*

U.S. Cl. 91—1 **10 Claims**

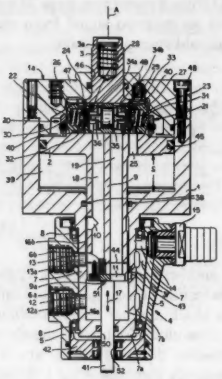
1. An actuator for a power chuck, said actuator comprising:

a hollow actuator housing having a rearwardly extending housing tube centered on an axis and having a closed rear end, said tube being formed with a pair of axially spaced and radially inwardly open grooves both having axial lengths equal at least to a predetermined axial distance, said tube further being formed at said grooves with respective radially throughgoing apertures;

a piston subdividing the interior of said housing into a pair of compartments and having a stem extending axially rearwardly in said tube, said piston being axially displaceable in said housing through an axial stroke at most as long as said distance, said piston being formed with a pair of throughgoing passages each having one end opening at said stem into a respective one of said grooves and another end opening into a respective one of said compartments;

means in said piston including a pair of check valves in said passages for prohibiting flow between said ends of said passages except when either of said passages is pressurized from the respective one end; and

a collar surrounding said tube and rotatable thereon about



said axis, said collar being formed with a pair of annular inwardly open grooves respectively aligned with said apertures and being provided with a pair of connections respectively opening into said inwardly open grooves of said tube.

4,332,187

AIR INTAKE HOUSING

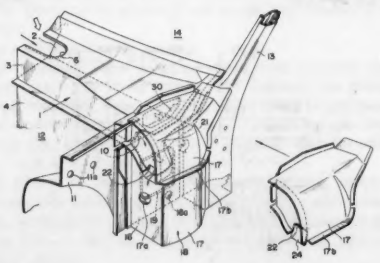
Eiji Imai, Yokohama, and Kazuaki Omote, Fujisawa, both of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed May 14, 1980, Ser. No. 149,872

Claims priority, application Japan, May 16, 1979, 54/65064[U]

Int. Cl.³ B60H *1/28*

U.S. Cl. 98—2.17 **9 Claims**



9. In a motor vehicle having an engine compartment separated from a passenger compartment by a dash lower panel joined to a dash upper panel, with one side of said engine compartment being defined by a hood ledge panel arranged contiguously with a dash side panel on the same side of said passenger compartment, an air intake housing and associated harness arrangement comprising: a cowl upper panel cooperating with said dash upper panel to define a cowl box into which fresh air is admitted via an intake port; an air box panel cooperating with said dash side panel to define an air box communicating with said cowl box, said air box providing a fresh air path leading from said inlet port to a delivery port in said dash side panel; and a harness for providing an electrical connection between said engine and passenger compartments, said harness

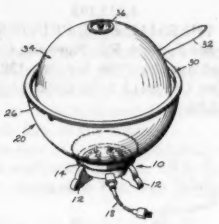
being arranged to bypass said dash lower panel by being threaded from said passenger compartment into said air box through an opening in said dash side panel, and from said air box into said engine compartment through additional openings in said air box panel and said hood ledge panel.

4,332,188

COMBINATION COOKER

Frances Y. Rhear, 1102 Lions Park Dr., St. Joseph, Mich. 49085

Filed Sep. 29, 1977, Ser. No. 837,736
Int. Cl.³ A47J *37/04;* A23L *1/18*
U.S. Cl. 99—323.5 **4 Claims**



1. A combination cooker for popcorn, pizza, shish kebabs, and deep-frying comprising a base having an upwardly extending annular rim supported for positioning upon a table and including a heating element, a bowl-shaped body having an opening in its bottom wall and terminating in an upper annular rim, said body removably seated upon said base within said annular rim thereof with said body opening positioned over said heating element, and angular planar sheet means for supporting food items during cooking, said heat means seated removably upon said body with the rim of said body supporting the sheet means in a generally horizontal plane, said sheet means spanning said body at its rim and overlying said heating element, a removable cover positioned over said sheet means, said cover including a lower angular edge supportingly contacting such sheet means, said body rim having diametrically opposed slots formed therein, basket means for holding food items, said basket means having an impervious base and a perforated top, a shaft extending through said basket means and including opposite ended portions extending from each side of the basket means, said basket means fitting with clearance within said body when said cover and sheet means are removed and having said shaft end portions fitting within said body slots to support said basket means within said body above said heating element.

4,332,189

APPARATUS FOR PREPARATION OF FOODSTUFFS, PARTICULARLY SAUSAGES AND BUNS

Robert M. Stuck, Clover, S.C., assignor to Marshall Air Systems, Inc., Charlotte, N.C.

Filed May 16, 1980, Ser. No. 150,680
Int. Cl.³ A47J *27/10, 27/12*
U.S. Cl. 99—339 **6 Claims**

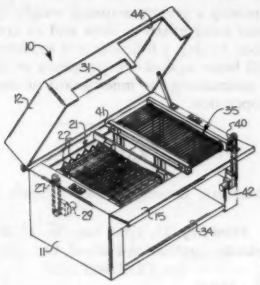
1. Apparatus for preparing foodstuffs and particularly sausages and buns such as hot dogs and comprising:

housing means defining a foodstuff heating chamber having an inlet and an outlet for the introduction and discharge of foodstuffs;

shared heating means for heating said chamber and both sausages and buns passing therethrough and including reservoir means within said housing means for containing water and means for heating water contained in said reservoir means to an elevated temperature less than boiling;

sausage conveyor means mounted in said housing means for immersing sausages in heated water contained in said reservoir means and for maintaining immersed sausages submerged while moving immersed sausages through heated water so as to heat the sausages to a predetermined internal temperature; and

bun conveyor means mounted in said housing means overlying said reservoir means and adjacent and to one side of said sausage conveyor means for engaging buns and for subjecting engaged buns to moist heat including heated



vapor from heated water contained in said reservoir means so as to heat the buns to a predetermined internal temperature;

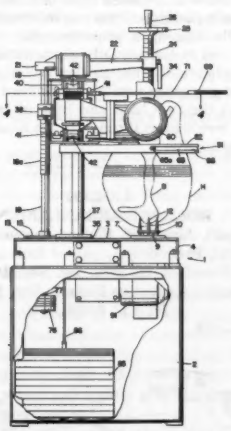
said conveyor means being arranged relative to said inlet and said outlet for receiving foodstuffs introduced thereinto and for discharging heated foodstuffs therefrom.

4,332,190

SPIRAL MEAT SLICER

Clyde D. Mart, Beachwood, Ohio, assignor to First National Supermarkets, Inc., Maple Heights, Ohio

Filed Jun. 3, 1980, Ser. No. 156,254
Int. Cl.³ A23N *7/00;* B23D *19/00*
U.S. Cl. 99—538 **4 Claims**



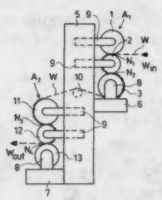
1. In a spiral meat slicer of the character described, means for mounting a whole ham having a central bone structure in a substantially vertical position, means for rotating said ham about the axis of said bone structure, a slicer or cutter unit, means for moving said cutter unit vertically relatively to the ham, said unit comprising: a carriage frame, a circular cutting blade, means for rotating said blade, a hollow circular housing or guard in which said blade is enclosed, a portion of said circular housing or guard being removed to provide an opening in the side of the guard through which a portion of said

cutting blade projects, an inner guard or door which is concentric with said housing and is rotatable within said housing to close said opening in the guard to avoid exposure of said blade through said opening, a handle for moving said inner guard manually to expose said blade through said opening when the cutter unit is in use and to close said opening when the cutter unit is not in use, means for maintaining said inner guard or door closed, when the cutter unit is not in use, said last-named means comprising a gravity-actuated weight operatively connected to said inner guard or door and an arm on said inner guard or door having a follower roll mounted thereon, said follower roll bears against the periphery of the ham for the purpose of maintaining the inner guard or door open during the slicing operation.

4,332,191
CALENDER

Matti Kankaanpaa, Espoo, Finland, assignor to Valmet Oy, Finland

Filed Sep. 29, 1980, Ser. No. 192,027
Claims priority, application Finland, Oct. 15, 1979, 793200
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—162 R **14 Claims**

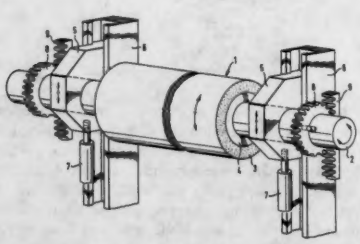


1. Calender apparatus adapted to be directly associated with a paper machine or the like or calendering a web and comprising a plurality of hard rolls with at least one soft roll defining nips, comprising: at least two separate calender units mounted on a unitary frame and spaced from one another, each of said calender units including at least one intermediate roll and two hard end rolls defining a respective pair of nips with said intermediate roll at substantially diametrically opposed sides thereof, and wherein the intermediate roll of at least one of said calender units comprises a soft roll defining a respective pair of soft nips with the two hard end rolls of said calender unit, whereby the web travels through and is treated by said calender units sequentially.

4,332,192
ROLL NIP ARRANGEMENT

Jukka Joutsjoki, Järvenpää, Finland, assignor to Oy Wartsila AB, Helsinki, Finland

Filed Dec. 15, 1980, Ser. No. 216,771
Claims priority, application Finland, Dec. 17, 1979, 793957
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—168 **3 Claims**

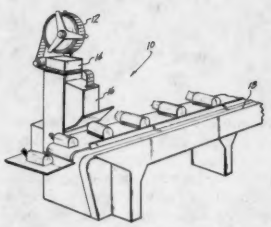


1. A paper web treatment apparatus or the like including a nip forming roll pair, at least one of the rolls in said roll pair being radially movable and having a mantle portion rotatable on a central shaft portion, said movable roll being connected to a device for moving it in a radial direction for disengagement from the other roll of said roll pair, said device comprising means for producing a mechanically guided rotary motion at both ends of said shaft portion simultaneously with said radial motion, said shaft portion forming a rigid member mechanically interconnecting said rotary motions at both ends of said movable roll, thereby synchronizing said radial motions of both ends of said movable roll for obtaining parallel disengagement of said movable roll from the other roll of said roll pair.

4,332,193
THERMAL LINE PRINTER

Billy P. Noyes, 104 E. Rock Rd., Norwalk, Conn. 06851

Filed Apr. 14, 1980, Ser. No. 139,954
Int. Cl.³ B41J *3/50*; B65B *61/00*
U.S. Cl. 101—93.01 **4 Claims**



1. A process for coding and packaging merchandise in a bag comprising the steps of:

(a) providing a plurality of closure tabs having a sensitive surface selected from the group consisting essentially of thermal sensitive and electro sensitive means, each of said closure tabs being divided into N adjacent areas corresponding to the number of character lines being printed;

(b) providing a plurality of bags containing merchandise;

(c) providing a printer having N print heads selected from the group consisting essentially of thermal print heads and electrostatic print heads arranged in series wherein N corresponds to the number of character lines to be printed;

(d) providing logic circuit means for feeding a plurality of closure tabs to said thermal printer such that the N_1 area on N_1 closure tab is associated with N_1 print head, N_2 area on N_2 closure tab is associated with N_2 print head, etc.;

(e) providing logic circuit means for sensing when said N_1 area on said N_1 closure tab is associated with said N_1 print head, said N_2 area on said N_2 closure tab is associated with said N_2 print head, etc. and simultaneously bringing said print heads associated with said area on said closure tabs in contact with said areas for printing a character line on each of said closure tabs;

(f) providing logic circuit means for simultaneously retracting said print heads and advancing said closure tabs such that N_3 area on said N_2 closure tab is associated with N_3 print head, N_2 area on N_1 closure tab is associated with said N_2 print head, N_1 area on N_0 closure tab is associated with said N_1 print head, etc.;

(g) providing logic circuit means for sensing when said N_3 area on said N_2 closure tab is associated with said N_3 print head, said N_2 area on said N_1 closure tab is associated with said N_2 print head, said N_1 area on said N_0 closure tab is associated with said N_1 print head, etc. and simultaneously bringing said print head associated with said areas on said closure tabs in contact with said areas for printing a character line on each of said closure tabs;

(h) repeating said feeding and printing until all of said plurality of closure tabs are coded with N character lines;

(i) feeding said coded closure tabs to a bag closing apparatus; and

(j) applying said tabs to said bags containing said merchandise using said bag closing apparatus thereby closing same.

4,332,194
ARRANGEMENT FOR REDUCING VIBRATION OF CYLINDERS IN PRINTING PRESS

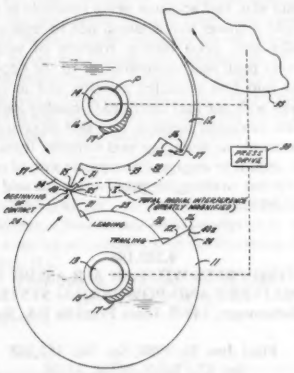
Valentin Gensheimer, Muhlheim am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 205,123, Nov. 10, 1980, abandoned. This application Jan. 15, 1981, Ser. No. 225,419

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945280

Int. Cl.³ B41F *7/02, 13/08*

U.S. Cl. 101—216 **8 Claims**



1. A rotary printing press including a frame, first and second cylinders journaled in the frame in rolling engagement and biased against one another to produce a force at an operating level, each of the cylinders having a longitudinal groove defining a gap in the cylinder surface, means for driving the cylinder so that the gaps are rotated in opposed synchronism with one another, the first cylinder being rigid and the second cylinder being resiliently covered, the groove in the first cylinder defining leading and trailing end walls oriented in a generally radial direction as well as a bottom wall, with the end walls terminating at lips at the cylinder surface, the lips on the end walls each having a bead projection which extends longitudinally therealong and which projects a small distance outwardly from the nominal radial dimension of the cylinder thereby causing the lip on the leading end wall of the first cylinder to engage the surface of the second cylinder earlier than it would in the absence of a bead and causing the lip on the trailing end wall to separate from the surface of the second cylinder later than it would in the absence of a bead thereby to enlarge the pressure build-up and pressure drop-off angles of the cylinders and to cause a more gradual build-up of pressure between them to the operating level as well as a more gradual decrease from the operating level.

4,332,195
VARIABLE-AMPLITUDE VIBRATOR FOR INKING ROLLERS IN PRINTING PRESSES

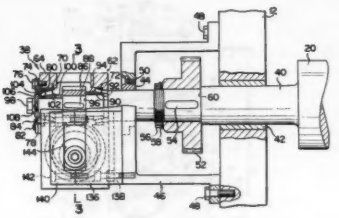
Shizuo Mizumura, Fussa, Japan, assignor to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed Nov. 14, 1980, Ser. No. 207,200

Claims priority, application Japan, Nov. 19, 1979, 54/148807

Int. Cl.³ B41F *31/14*; B41L *27/16*

U.S. Cl. 101—349 **7 Claims**



1. In a rotary-type printing press, in combination:

(a) at least one inking roller having a trunnion;

(b) support means supporting the trunnion so as to permit both rotary motion and endwise vibration of the inking roller;

(c) a reciprocator rotatably mounted on the trunnion and restrained from displacement in the axial direction of the trunnion for simultaneous vibratory motion therewith;

(d) a worm fixedly mounted on the trunnion;

(e) a worm wheel meshing with the worm and rotatably supported by the reciprocator, the worm wheel being adapted for simultaneous vibratory motion with the reciprocator;

(f) an eccentric shaft supported eccentrically by the worm wheel for simultaneous rotation therewith about the axis of the latter, the eccentric shaft being capable of angular displacement about its own axis relative to the worm wheel;

(g) the eccentric shaft having an offset extension projecting eccentrically from at least one of its opposite ends;

(h) an amplitude adjustment mechanism for adjustably varying the distance between the axis of the worm wheel and the axis of the offset extension of the eccentric shaft, the amplitude adjustment mechanism permitting the eccentric shaft to be angularly displaced about its own axis relative to the worm wheel and rigidly coupled thereto in a desired angular position; and

(i) guide means, mounted in fixed relationship to the support means, providing a guideway extending perpendicular to the axis of the trunnion, the offset extension of the eccentric shaft being engaged in the guideway for rectilinear reciprocation therealong;

(j) whereby upon rotation of the trunnion the eccentric shaft with its offset extension functions to translate the rotation of the worm wheel into the endwise vibratory motion of the inking roller via the reciprocator, the amplitude of the vibratory motion being adjustably varied by the amplitude adjustment mechanism.

4,332,196
PRESSURIZED ARRANGEMENT INCLUDING TIMERS FOR METERING INK ON THE FOUNTAIN ROLLER OF A PRINTING PRESS

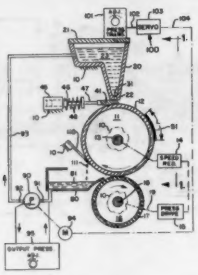
Rolf Braun, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 213,865, Dec. 8, 1980, abandoned. This application Feb. 20, 1981, Ser. No. 236,146

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951651

Int. Cl.[3] **B41F** *31/08;* **B41L** *27/10*

U.S. Cl. 101—365 **9 Claims**



1. An ink fountain comprising, in combination, a frame, a fountain roller journaled with respect to the frame and extending the length thereof, drive means for slowly rotating the fountain roller, an acceptor roller in engagement with the fountain roller, a plurality of nozzles having narrow axially extending openings and arranged in general alignment with one another closely side by side to define respective zonal positions, each nozzle being connected to a source of viscous ink under predetermined pressure, reciprocable slides arranged side by side respectively interposed between the nozzles and the surface of the fountain roller, each slide having a reference position for normally blocking off ink flow from the associated nozzle and being retractable transaxially therefrom to open the nozzle for depositing of ink on the surface of the fountain roller, means including an individual power actuator interposed between each slide and the frame for forcibly and temporarily retracting the slide from its reference blocking position as long as the power actuator is energized, each power actuator having a biasing spring for restoring the slide to its reference blocking position when the power actuator is deenergized, and an individually adjustable control device associated with each actuator for cyclically activating such actuator for pre-set intervals of time which correspond to the ink requirement in the respective zonal position.

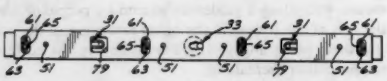
4,332,197
SELF-TENSIONING PRINTING CYLINDER LOCK

David L. Dulin, Fullerton, Calif., assignor to Beach Manufacturing Corp., Huntington Beach, Calif.

Filed May 22, 1980, Ser. No. 152,526

Int. Cl.[3] **B41F** *1/28*

U.S. Cl. 101—415.1 **4 Claims**



1. A printing press clamping apparatus mounted in a longitudinal groove formed by a printing cylinder apparatus and comprising:

an elongated tensioning bar disposed longitudinally in said groove for translation laterally therein from a medial position to oppositely disposed first and second retracted positions and formed with top and bottom sides, as well as lateral sides, formed with a centrally disposed bore opening downwardly into said bottom side:

a base plate in the form of a bar interposed between said tensioning bar and the bottom of said groove;

a pair of spring pockets formed in one of said bars at locations spaced equidistant on opposite longitudinal sides of said bore;

a pair of spring anchors projecting into said respective pockets and mounted with the other of said bars;

a pair of dual acting spring means disposed in said respective pockets and interposed between said spring anchors and said one of said bars to urge said tensioning bar to said tensioning medial position, said spring means having substantially equal spring rates to urge the opposite extremities of said tensioning bar to said medial position with substantially equal force;

said base bar being formed with an elongated follower receiving slot disposed at the open end of said bore and formed on its opposite sides with oppositely disposed detents;

fastening means for fastening said clamping apparatus to said cylinder apparatus; and

a retractor formed with a cylindrical body received freely rotatable in said bore and including an eccentrically disposed follower projecting longitudinally from said bore into said slot, said actuator being rotatable in said bore to orbit said follower to one lateral side to engage one side of said slot and, upon further rotation of said actuation, positively push said tensioning bar to the opposite lateral side to said first retracted position and to register said follower with one said detent to releasably lock said bar in said first retracted position, and said retractor being further rotatable to disengage said follower from said detent and to orbit it to engage the opposite side of said slot and upon further orbiting, to positively push said bar to said second retracted position.

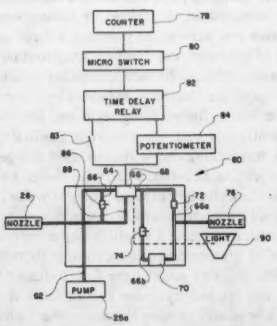
4,332,198
PRINTING PRESS WITH AN AIR ASSIST SHEET DELIVERY AND POWDERING SYSTEM

Duane A. Schmoeger, 149-B Jones Franklin Rd., Raleigh, N.C. 27606

Filed Jun. 23, 1980, Ser. No. 162,163

Int. Cl.[3] **B41F** *23/04, 23/06*

U.S. Cl. 101—416 B **11 Claims**



1. In a printing machine having printing means for transferring printing matter onto respective paper sheets passing through the printing machine and including a delivery end for receiving the printed sheets wherein within the delivering end there is provided a stacking area where the printed sheets can

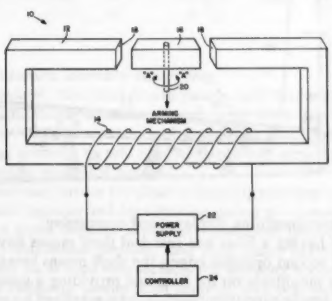
be stacked one on top of another, the improvement comprising an air and powder dispersion system for separately dispersing powder on respective sheets prior to stacking and prior to another sheet being stacked thereon and for separately directing air against respective sheets after powdering as they are stacked so as to assist in the neat and orderly stacking thereof, said air and powder dispersion system comprising: a source of compressed air; nozzle support means adjustably mounted about said delivery end generally above the sheet stacking areas; air dispersing nozzle means secured to said nozzle support means and communicatively connected to said source of compressed air for receiving air therefrom and for directing the air downwardly therefrom onto the respective sheets being stacked; a time controlled on-off powdering system including a source of powder communicatively connected to an air source means; powder dispersing means separate and independent of said air dispersing nozzle means and communicatively connected to said source of powder and generally disposed about the delivery end of said printing machine for dispersing powder onto respective sheets being directed to the stacking area prior to the sheets reaching said stacking area and prior to coming into operative contact with air being dispersed by said air dispersing nozzle means, wherein once stacked the powder generally serves to separate the respective stacked sheets and facilitates movement of the sheets during the delivery and stacking process; and control means for controlling the air dispersed by said air dispersing nozzle means and the powder dispensed by said powder dispersing means and for further controlling the time duration of powder dispensing in accordance with the movement of each respective sheet prior to stacking, said control means including on-off powder dispensing control means for sensing the presence of an oncoming sheet and for actuating said powdering system for a selected time interval while the sheet passes under said powder dispersing means such that powder is only dispersed while the sheet is passing under the powder dispersing means.

4,332,199

ELECTROMAGNETIC ARMING RATE REGULATOR

James E. Means, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 9, 1980, Ser. No. 157,723
Int. Cl.³ F42C *9/00*
U.S. Cl. 102—276 **14 Claims**



1. A device for adjusting the arming time of a projectile having an arming mechanism for arming the projectile at a predetermined rate comprising:

a pallet made of magnetically susceptable material and supported for repetitive movement, the pallet being connected to the arming mechanism for corresponding movement therewith and driven for movement by the arming mechanism while arming;

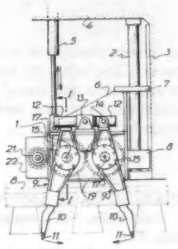
electromagnetic means for generating a magnetic field; and means for adjustably inducing the magnetic field within the pallet for retarding movement of the pallet thereby changing the rate of arming to a rate slower than the predetermined rate.

4,332,200

TAMPING DEVICE FOR RAILWAY TAMPING MACHINE

Jorg Ganz, Etoy, Switzerland, assignor to Sig Societe Industrielle Suisse, Switzerland

Filed Jul. 17, 1980, Ser. No. 169,802
Claims priority, application Switzerland, Aug. 3, 1979, 714379
Int. Cl.³ E01B *27/16*
U.S. Cl. 104—12 **8 Claims**



1. A tamping device for railway track tampers, comprising:

(a) a vertically movable housing;

(b) at least two parallel shafts rotatably mounted in said housing, each of said shafts having at least one end portion extending out of said housing, said end portion being eccentric;

(c) at least two pivoting substantially rectilinear lever-shaped tamping tools, each having an end blade at its lower end, each of said tamping tools being respectively and pivotally mounted on said outer eccentric end portion of one of said shafts;

(d) two double acting jacking assembly means extending in a substantially horizontal direction and respectively articulated to said housing and to said tamping tools for pivoting said two tamping tools in phase opposition;

(e) an inertia flywheel fastened on each of said shafts inside said housing; and

(f) motor means for driving said shafts into rotation, whereby a vibration of elliptical trajectory is imparted to the end blade of each tamping tool.

4,332,201

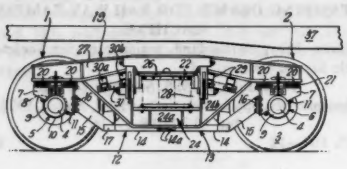
STEERING RAILWAY VEHICLE TRUCKS

Maurice G. Pollard, Mickleover, and Allan Sutton, Duffield, both of England, assignors to British Railways Board, London, England

Filed May 21, 1979, Ser. No. 41,169
Claims priority, application United Kingdom, May 26, 1978, 23576/78
Int. Cl.³ B61F *3/08, 5/36, 5/38, 5/52*
U.S. Cl. 105—167 **8 Claims**

1. In a railway vehicle, a truck having side frames, a bolster, and at least two wheel-sets, each wheel-set being a live axle mounted in a respective pair of axle bearings, at least one axle bearing of one wheel-set being elastically interconnected with at least one axle bearing of the other wheel-set through bracing means providing bracing between the wheel-sets, said bracing means comprising a frame structure for each wheel-set which extends transversely of the vehicle and is connected between axle boxes housing said axle bearings of each respective wheel-set, the improvement wherein each said frame structure comprises a first frame member which is transversely arranged and extends substantially horizontally, and a pair of second frame

members rigidly connected one at each outer end of said first frame member, said second frame members extending upwardly and being rigidly connected at their upper ends to respective axle boxes of their wheel-set, said first frame members being connected intermediately via an elastic connection at a level well below said live axles, on said side frames between the wheel-sets and within and above the space defined by construction of said frame structures, said first frame members passing freely beneath said bolster.



4,332,202

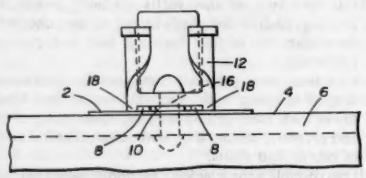
SIDE BEARING CAGE ASSEMBLY

Harvey E. Amwake, West Falls, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 853,652, Nov. 21, 1977, abandoned. This application Jun. 24, 1980, Ser. No. 162,474

Int. Cl.³ B61F *5/14, 5/24;* **F16C** *17/04*

U.S. Cl. 105—199 CB **6 Claims**



1. In a railway car truck bolster having an upper surface with a substantially centrally located side bearing means near ends of the bolster, the improvement comprising a plurality of vertically extending pads disposed on the upper surface of the bolster near the ends for cooperation with a side bearing cage to match only specific cage bearing portions as required by the pads to locate the side bearing cage to effect transfer of the lateral and longitudinal car body loads to the bolster.

4,332,203

RAILWAY CAR FLOOR ASSEMBLY APPARATUS

Robert Flowers, 519 N. Dawson St., Thomasville, Ga. 37192

Continuation-in-part of Ser. No. 861,715, Dec. 19, 1977, abandoned. This application Jul. 5, 1979, Ser. No. 54,801

Int. Cl.³ B23Q *13/00;* **B25C** *7/00;* **B61D** *17/10;* **B66F** *13/00*

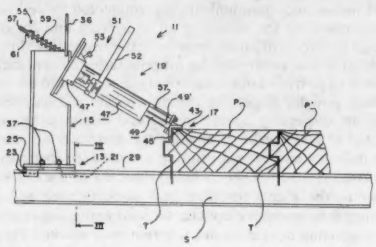
U.S. Cl. 105—422 **22 Claims**

1. An apparatus for properly positioning a railroad car deck plank on a floor beam of a railroad car against a stop means prior to said deck plank being attached to said floor beam with clip-like tie means, said apparatus comprising, in combination:

(a) anchor means for being readily and removably applied to said floor beam adjacent said plank, said anchor means including hook means for positive engagement with a downwardly facing surface of said floor beam and for easily and removably mounting said anchor means on said floor beam;

(b) a post attached to and extending upward from said anchor means, said post having a first end for being attached to said anchor means and having a second end for being located above said floor beam when said anchor means is applied to said floor beam;

(c) engagement means for engaging a portion of said plank, said engagement means including a first portion for contacting the top of said plank and including a second portion for contacting the side of said plank, said first and second portions of said engagement means being positioned substantially at right angles to one another; and



(d) jack means for selectively causing said engagement means to force said plank downwards against said floor beam and sidewards against said stop means, said jack means having a first end being attachable to said second end of said post for downward inclination and having a second end for being attached to said engagement means, said jack means inclining downwardly with respect to said floor beam to exert a downward and sideward force through said first and second members of said engagement means on said plank.

4,332,204

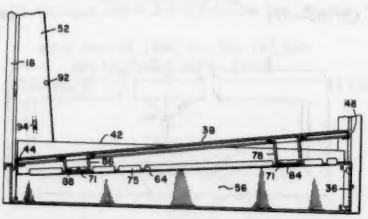
MERCHANDISING DISPLAY STAND

Gerald M. Hewell, Dewy Rose, Ga., assignor to The Mead Corporation, Atlanta, Ga.

Filed May 19, 1980, Ser. No. 151,376

Int. Cl.³ A47F *5/12*

U.S. Cl. 108—1 **3 Claims**



1. A merchandising display stand comprising:

a base having a front and rear and shelf means having first and second opposite edges, the shelf means being removably mountable on the base and providing a substantially flat article-supporting surface, characterized by means on the base for supporting the shelf means, and means on the shelf means cooperable with the means on the base, for positioning the article-supporting surface in a first plane when the shelf means is mounted on the base with its first edge toward the front of the base, and for positioning the article-supporting surface in a second plane which intersects said first plane when the shelf means is mounted on the base with its first edge toward the rear of the base;

in which said base comprises a pair of side panels, in which the means on the base for supporting the shelf means comprises coplanar flange means formed on each side panel and projecting toward the other side panel, the

flange means on each panel providing an upwardly facing supporting area disposed in an oblique plane, and in which the means on the shelf means cooperable with the means on the base comprises first and second U-shaped reinforcing channels extending in directions parallel to said first and second edges of the shelf, and secured to the underside of the shelf in spaced relationship to each other and on opposite sides of the midline between said first and second edges, the U-shaped channels having coplanar web sections disposed in a plane oblique with respect to the article-supporting surface, the ends of the coplanar web sections providing downwardly facing contact areas underneath the shelf means and adjacent the opposite side edges of the shelf means, each downwardly facing contact area being positioned for engagement with one of the flange means when the shelf means is mounted on the base with its first edge toward the front of the base, and with the other of said flange means when the shelf means is mounted with its first edge toward the rear of the base;

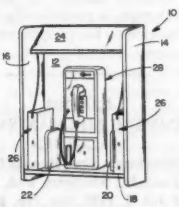
and having tabs fixed to and projecting upwardly from the flange means on each panel, and slot means formed in said downwardly facing contact areas, said slot means being arranged to receive said tabs and thereby lock the shelf against forward and rearward movement with respect to the base.

4,332,205

INTERLOCKING FURNITURE ASSEMBLY AND METHOD

Robert W. Corl, Jr., Grand Rapids, Mich., assignor to Modular Systems, Inc., Fruitport, Mich.

Filed Sep. 13, 1979, Ser. No. 75,311
Int. Cl.³ A47B *5/02*
U.S. Cl. 108—60 **22 Claims**



1. A furniture assembly comprising:

first, second, third and fourth panels; said first panel being secured to said second panel; said third panel being removeably secured to said first panel; said fourth panel being secured to said second panel and removeably secured to said third panel;

first fastening means for slidably securing said first and third panels together and for allowing sliding movement of said third panel between a partially assembled position and a fully assembled position; said third panel having access means on at least two surfaces for allowing access to said first fastening means from each of said two surfaces to facilitate assembly and disassembly of said third panel with other panels;

second fastening means for securing one portion of said fourth panel on said second panel;

third fastening means for slidably securing another portion of said fourth panel to said third panel;

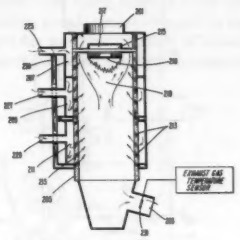
said third fastening means being aligned for securement when said first fastening means is in said partially assembled position and fully secured to lock said fourth panel to said second and third panels when said third panel is moved to said fully assembled position whereby said first, second and third fastening means prevent removal of said fourth panel from said second and third panels until said third panel is in said partially assembled position.

4,332,206

AFTERBURNER FOR COMBUSTION OF STARVED-AIR COMBUSTOR FUEL GAS CONTAINING SUSPENDED SOLID FUEL AND FLY ASH

Gordon H. Tucker, Enumclaw, and Robert E. Fitch, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 9, 1980, Ser. No. 148,361
Int. Cl.³ F23J *15/00*
U.S. Cl. 110—203 **9 Claims**



1. A starved-air combustor comprising:

a primary combustion chamber having an inlet end for receiving fuel, said primary combustion chamber for combusting said received fuel to produce hot, combustion gases and combustion residue, said primary combustion chamber further including an outlet end for discharging said hot, combustion gases;

a secondary combustion chamber having an inlet end for receiving said hot, combustion gases and an outlet end, said secondary combustion chamber for reacting said hot, combustion gases with selective amounts of air at a significant velocity to combust further any combustible material suspended in said received hot combustion gases to produce secondary hot combustion gases and for discharging said secondary hot combustion gases through said outlet end of said secondary combustion chamber, said secondary combustion chamber including at least first and second air supply zones, each said air supply zone comprising a plenum located adjacent to said secondary combustion chamber, an air supply into said plenum, and at least one air passageway for enabling the flow of air from said plenum into said secondary combustion chamber; and

means for controlling the supply of said reaction air to said secondary combustion chamber according to the temperature of said secondary combustion gases discharged from said outlet end of said secondary combustion chamber.

4,332,207

METHOD OF IMPROVING LOAD RESPONSE ON COAL-FIRED BOILERS

Henry J. Blaskowski, Avon, and David Palchik, Bloomfield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

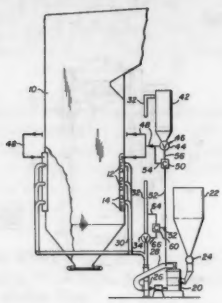
Filed Oct. 30, 1980, Ser. No. 202,264
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—347 **4 Claims**

1. A method of rapidly increasing the amount of pulverized coal supplied to a coal-fired furnace equipped with a coal pulverizer from a first steady-state level to a second steady-state level in response to an increase in the operating load demand of the furnace, comprising the steps of:

a. causing a step increase in the rate of input of raw coal to the pulverizer from a first rate corresponding to a pulverizer output commensurate with said first steady-state level

to a second rate corresponding to a pulverizer output commensurate with said second steady-state level;

b. simultaneously with causing a step increase in the rate of input of raw coal to the pulverizer, establishing an additional supply of pulverized coal to the furnace from a source independent of the pulverizer, said additional supply of pulverized coal being initially established at an amount sufficient to cause a step increase in the amount of pulverized coal supplied to the furnace from said first steady-state level to said second steady-state level;



c. as the pulverizer output gradually increases in response to the step increase in rate of input of raw coal to the pulverizer, controllably decreasing the amount of pulverized coal supplied to the furnace in said additional supply so that the total amount of pulverized coal supplied to the furnace by means of the pulverizer and said additional supply together remains constant at said second steady-state level; and

d. simultaneously with the pulverizer output stabilizing at said second steady-state level, terminating said additional supply of pulverized coal to the furnace from said independent source.

4,332,208

SEWING MACHINE SPEED CONTROL CIRCUIT

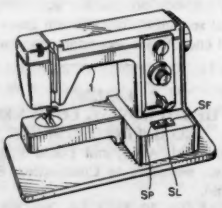
Toshiaki Watasue, Tokyo, and Hachiro Makabe, Hachioji, both of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed May 29, 1979, Ser. No. 43,223

Claims priority, application Japan, Jun. 1, 1978, 53-64936

Int. Cl.³ D05B *69/18*

U.S. Cl. 112—277 **11 Claims**



1. A control circuit for use with electric motors and the like, particularly with electric motors in sewing machines, the circuit allowing a user to select a desired operating speed from a plurality of available operating speeds, and to vary such selected speed at will, the control circuit automatically causing the motor to maintain such desired operating speed until a user varies it comprising:

a manually operable programmer producing a digital code signal which represents a desired operating speed, the programmer operating in a manner that the code signal produced can be varied to provide a plurality of codes corresponding to a plurality of available operating speeds and any code provided will be maintained until changed by a user;

a clock pulse generator producing clock pulses of constant frequency;

a clocked and programmable counter, the counter being connected to the programmer in order to be programmed thereby and being connected to the clock pulse generator in order to be clocked thereby and operating in a manner that when the counter is programmed with a code signal it will count one count away from the code signal each time the counter receives a clock pulse and will cease to count after counting to a predetermined number, the counter generating a digital drive signal, the drive signal having a first value when and only when the counter is counting and having a second value when and only when the counter has ceased to count, the counter further operating in a manner that it can always be reprogrammed with a code signal to begin counting again;

a buffer responsive to the drive signal and producing an analog control signal, the control signal increasing when the drive signal has its second value and decreasing when the drive signal has its first value;

a switch circuit in series with the motor, whereby the motor is turned on when the switch circuit is closed and whereby the motor is turned off when the switch circuit is opened;

a switch control responsive to the analog signal and cooperating with the switch circuit in a manner that the switch circuit is closed and opened in response to changes of the analog signal; and

a reprogram pulse generator responsive to position of the motor and cooperating with the counter, the reprogram pulse generator generating a reprogram pulse every time the motor rotates through a predetermined angle, whereby the counter is periodically reprogrammed with the code maintained by the programmer when such reprogramming occurs.

4,332,209

THREAD TRIMMING MECHANISM FOR SEWING MACHINES

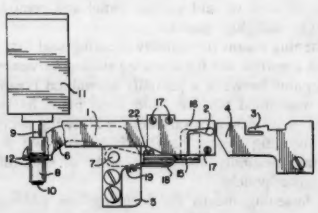
Hermann Gauch, Moglingen, Fed. Rep. of Germany, assignor to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,087

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928270

Int. Cl.³ D05B *65/06*

U.S. Cl. 112—287 **10 Claims**



1. A sewing machine thread cutting mechanism comprising:

fixed knife means mounted adjacent the stitch forming area of the sewing machine;

resiliently biased reciprocal knife means having a blade portion adapted to cooperate with said fixed knife means, said reciprocal knife means being arranged such that said blade portion is normally and continually biased against said fixed knife means under a first low contact pressure

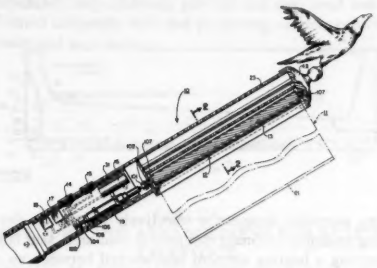
and is adapted to cooperate with said fixed knife means under a second higher contact pressure when a thread chain is introduced between the fixed and reciprocal knife means.

4,332,210

AUTOMATIC FLAG SYSTEM

William S. Lambert, 52 Tokalon Pl., Metairie, La. 70001

Filed Apr. 9, 1980, Ser. No. 138,535
Int. Cl.[3] G09F *17/00*
U.S. Cl. 116—173 11 Claims



1. An automatic flag display system, comprising:

a flexible sheet of material upon which flag-like display indicia is disposed;

extended hollow flag storage compartment means which is at least generally impervious to the weather elements for storing said sheet in a flat, loosely furled form, the interior end of said sheet being fixedly attached in the interior of said storage compartment means;

a longitudinally extended bottom opening in said storage compartment through which the exterior end of said sheet projects; and

longitudinally extended drive means associated and aligned with said bottom opening for furling and unfurling said sheet, said sheet in its furled disposition being loosely stored flat with folds parallel to the direction of the longitudinal expanse of both said opening and said drive means and loosely folded in the direction normal to said longitudinal expanse within said storage hollow compartment means.

4,332,211

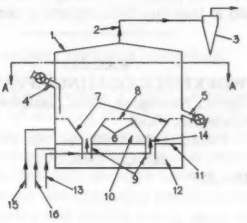
GRANULE PRODUCING APPARATUS

Susumu Nioh, Tokyo; Hiroshi Hirayama; Tetsuzo Honda, both of Funabashi; Takashi Nagahama, Mobara; Masaki Naruo, Mobara; Teruo Yoshida, Mobara; Gisaburo Siotu, Kawasaki; Yoshinori Sato, Funabashi, and Kenji Toyama, Kamaya, all of Japan, assignors to Toyo Engineering Corporation; Mitsui Toatsu Chemicals, Inc. and Tsukishima Kikai Co., Ltd., all of Tokyo, Japan, a part interest to each

Filed Aug. 4, 1980, Ser. No. 175,214
Claims priority, application Japan, Aug. 6, 1979, 54-100131
Int. Cl.[3] B05C *5/00*
U.S. Cl. 118—62 6 Claims

1. An apparatus for enlarging the sizes of granules, comprising:

an upright container having a sidewall, a top wall and a bottom wall, said container having a horizontal, perforate, first wall extending thereacross and dividing the interior of said container into an upper portion and a lower portion, said upper portion being adapted to contain a bed of the granules, said container having a horizontal, imperforate, second wall extending across said lower portion of said container, said imperforate second wall being spaced downwardly from said perforate first wall and spaced upwardly from said bottom wall, the space between said first wall and said second wall defining a first, air stream supply chamber, the space between said second wall and said bottom wall defining a second, air stream supply chamber; a plurality of parallel, upright, spaced apart, imperforate funnels extending downwardly from said first wall to said second wall, each funnel comprising an upper section in the form of a vacant, inverted truncated cone whose wide upper end opens into said upper portion of said container and whose narrow lower end is located close to said second wall, and a cylindrical pipe coaxial with and extending downwardly from the lower end of said cone and penetrating through said second wall and opening into said second air stream supply chamber, said inverted truncated cone being adapted to be substantially filled with granules; nozzle means disposed in each of said cylindrical pipes for spraying droplets of liquid into said cylindrical pipes; first air supply means connected to said



first air stream supply chamber for supplying pressurized air thereto which air flows upwardly through the perforations in said first wall to form a fluidized bed of granules above said first wall; second air supply means connected to said second air stream supply chamber for supplying pressurized air thereto which latter air flows upwardly in the form of jet streams through said pipes to entrain said droplets therein and thence through said funnels so that the granules in said funnels are coated by the liquid and are circulated in toroidal flow above said funnels; feed means for supplying feed granules into said upper portion of said container; discharge means attached to the sidewall of said container above and close to said first wall for discharging granules of enlarged size; and means for exhausting gas from the upper end of the upper portion of said container.

4,332,212

APPLICATOR FOR NORMALLY VISCOUS SUBSTANCES

Philip O. Jesme, South St. Paul, Minn., assignor to The Smead Manufacturing Company, Hastings, Minn.

Filed Sep. 26, 1980, Ser. No. 191,170
Int. Cl.[3] B05C *1/02;* B67D *5/00*
U.S. Cl. 118—202 7 Claims

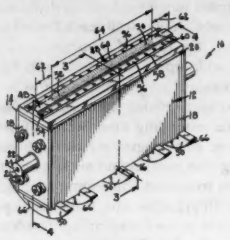
1. Apparatus for applying a normally highly viscous substance to article surfaces, comprising:

(a) an applicator having a chamber formed therein, an application surface, and a multiplicity of perforations providing communication between said chamber and said surface, said applicator disposed for revolution about an axis;

(b) a substance reservoir spaced radially inward from said applicator and disposed for movement with said applicator about said axis;

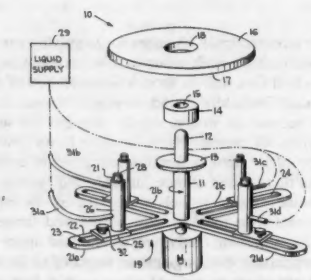
(c) conduit means providing radial communication between said reservoir and said chamber;

(d) at least one heat imparting element positioned proximate said conduit means; and



(e) a fluid filled plenum enclosing both said conduit means and said at least one heat imparting element.

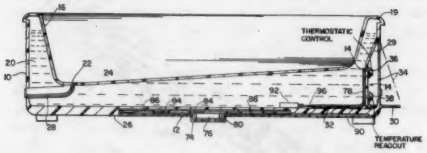
4,332,213
WORKPIECE COATING APPARATUS
Frank C. Marino, Newington, Conn., assignor to Loctite Corporation, Newington, Conn.
Filed Jul. 28, 1980, Ser. No. 173,204
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—211 **5 Claims**



1. An apparatus for applying a liquid coating along at least one predetermined path to the surface of a workpiece, comprising a spindle rotatable about a central axis thereof for supporting and rotating the workpiece to be coated, a stationary support member mounted on said spindle and lying perpendicular to said central axis, said support member including at least one track element extending radially outwardly of said axis, at least one wick jacket mounted on said track element at a distance from said spindle for describing said predetermined path, a wick applicator disposed within said jacket and extending outwardly of the upper end of said jacket, a vertically elongated slot in said jacket, means engaging said wick applicator through said slot for axially shifting same relative to said jacket, and means for supplying the liquid to said wick applicator for wetting the tip end thereof, whereby different contours of workpiece surfaces can be coated upon workpiece rotation.

4,332,214
HEATED BED FOR ANIMALS
Lee Cunningham, Drawer YY, Incline Village, Nev. 89450
Continuation-in-part of Ser. No. 807,216, Jun. 16, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 87,142
Int. Cl.³ A01K *1/035*
U.S. Cl. 119—1 **2 Claims**

1. A heated bed for animals such as dogs and cats comprising a shell means comprising an outer shell and a complementary inner shell, said outer shell providing an enclosure and having a base and substantially vertical walls, said complementary inner shell being of substantially rigid plastic and having a concave surface adapted to support and partially surround such animals, said outer and inner shells having spaced apart walls and bases adapted to receive liquid, said outer and inner shells being joined at their upper edges in the form of a curved lip to provide a narrow, enclosed, liquid reservoir for said liquid which is in direct thermal contact with the base and relatively vertical walls of said inner shell, the base of said inner shell being sloped from one end to the other, said shell means being provided with a fill port for said liquid reservoir, means in the bottom of said outer shell means providing a centrally located area for a selectively controlled electrical



heating assembly laminate, a selectively controlled electrical heating assembly laminate mounted in said area, said laminate comprising a heating element sandwiched between an upper metal plate and a lower metal foil, said metal plate contacting the outer shell, and a safety thermocouple below said metal foil covered with a layer of insulation, a plastic cover for said area, means providing a recessed opening in one of the vertical walls of the outer shell, a control means in said recessed opening electrically connected to said heating element, and a temperature sensing means mounted on the top surface of the base of said outer shell and electrically connected to said heating element.

4,332,215
MILKING INFLATION
Leigh R. Larson, Johnson Creek, Wis., assignor to Hi-Life Rubber, Inc., Johnson Creek, Wis.
Filed Oct. 1, 1980, Ser. No. 192,897
Int. Cl.³ A01J *5/04*
U.S. Cl. 119—14.49 **3 Claims**

1. An expansion ring type inflation for a teat cup assembly of a milking machine including a rigid, generally cylindrical, outer shell having an enlarged peripheral ledge at one end, said inflation being formed as a generally cylindrical, tubular member from an elastomeric material and including a main body portion, a tapered upper end portion formed integrally with said main body portion, said upper end being adapted to seat against the shell ledge after insertion of a rigid expansion ring and characterized by:

(a) an inner wall of decreasing inside diameter and terminating in a thickened rounded bead which defines a circular central mouth for receiving a teat of a cow when the expansion ring is inserted;

(b) an annular expansion ring-receiving portion adjacent the

juncture of said upper end portion with said main body portion and having a wall thickness substantially the same as said main body portion;

(c) an annular web section of reduced wall thickness formed integrally with said bead and extending longitudinally therefrom toward said expansion ring-receiving portion, said web section having a substantially uniform wall thickness which is about 25 to about 65% of the wall thickness of said main body portion; and

(d) a plurality of circumferentially-spaced ribs formed integrally with and extending longitudinally between said expansion ring-receiving portion and said bead and also formed integrally with and projecting radially outwardly from said web section.

4,332,216

PROCEDURE AND ARRANGEMENT FOR KEEPING LIVESTOCK

Wilhelmus G. H. Valkenburg, Stalbergweg 8, Venlo, Netherlands

Filed Jul. 3, 1980, Ser. No. 165,688

Claims priority, application Netherlands, Jul. 13, 1979, 7905474; Jan. 30, 1980, 8000563

Int. Cl.³ A01K *31/04*

U.S. Cl. 119—22 **6 Claims**

1. Arrangement for sanitarily housing livestock in a number of cages mounted adjacent one another comprising:

(a) a frame horizontally supporting said number of cages;

(b) an animal waste interceptor device operatively mounted in said frame and below said number of cages, said device including a support comprising a plurality of rollers and platelike sections alternatively disposed along the length of said support, at least a portion of said rollers and platelike sections being swinglike mounted between a substantially horizontal position and a sloping position, means for swinging said portion of said rollers and platelike sections from said sloping position to said substantially horizontal position, and a belt designed to rest on said support and to unwind from a stock reel mounted at one end of said frame and to be wound on a take-up reel mounted at the other end of said frame;

(c) a liquid waste discharge device mounted lengthwise in said frame and along one edge of said belt; and

(d) a receptacle for solid waste mounted in said frame transverse to said liquid waste discharge device and adjacent said take-up reel for said belt,

whereby liquid animal waste is continuously being discharged from said animal waste interceptor device into said liquid waste discharge device, with at least a portion of said belt resting on said portion of said rollers and platelike sections being in said sloping position, and solid animal waste being removed at periodic intervals from said animal waste interceptor device into said receptacle, with said portion of said rollers and platelike sections being swung into said substantially horizontal position by said means, and with said belt unwinding from said stock reel onto said take-up reel.

4,332,217

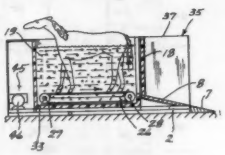
CONTROLLED RATE EXERCISER AND METHOD OF CONDITIONING

Grover M. Davis, Audubon, Iowa, assignor to Talbot-Carlson, Inc., Audubon, Iowa

Filed Aug. 11, 1980, Ser. No. 177,279

Int. Cl.³ A61D *11/00*

U.S. Cl. 119—29 **3 Claims**



1. An animal exercising apparatus comprising:

a frame;

treadmill means for providing a moving supported surface for an animal for allowing the animal to run in place, said treadmill means including a first roller; a second roller; a supporting means disposed between said first and second rollers; an endless belt disposed around said first and second rollers and said supporting means; and belt moving means for causing said endless belt to move around said first and second rollers;

container means disposed around and above said treadmill means for sealingly receiving a liquid whereby an animal supported by said treadmill means will be standing in the liquid within said container, said container means including a door means on one end thereof for allowing an animal to enter said container means;

filling means for filling said container means with a liquid;

draining means for draining a liquid out of said container means;

liquid holding tank means connected to said filling means and to said drainage means for holding a liquid for reuse when it is drained from said container;

means for producing massaging turbulence within said container means;

a centrifuge means for cleaning solids from the liquid;

liquid heating means connected to said liquid holding tank for heating the liquid to a desired temperature;

air inlet means connected upstream of said filling means for aeration of said container means and said liquid holding tank means; and

a transparent observation window means disposed in the lower portion of said container means for observing the legs of the animal while said treadmill means is in use.

4,332,218

SUPPORT SYSTEM FOR A FLUIDIZED BED

Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

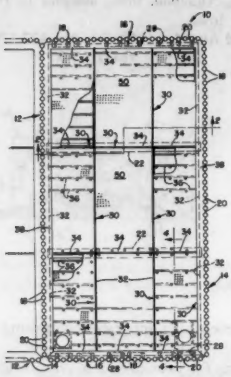
Continuation of Ser. No. 158,496, Jun. 11, 1980, abandoned, which is a continuation of Ser. No. 948,130, Oct. 3, 1978, abandoned. This application Feb. 11, 1981, Ser. No. 233,499

Int. Cl.³ F22B *1/02*

U.S. Cl. 122—4 D **15 Claims**

1. A system for supporting a fluidized bed in a boiler, said system comprising a plurality of support frames, means for supporting said support frames in an abutting relationship with one another, first attaching means attaching at least a portion of said frames to each other and to said supporting means and permitting limited relative movement between said frames and

between each frame and said supporting means, a plurality of grids, each grid supported entirely by one of said support



frames, and second attaching means attaching each grid to its respective support frame.

4,332,219

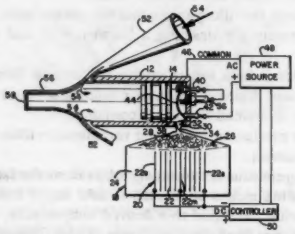
ELECTROCOMBUSTION ENGINE

Ernesto Gonzalez, c/o Howard, Brawner & Lovett, 131 Oade Savings Bldg., 119 E. Flagler St., Miami, Fla. 33131

Filed Nov. 18, 1980, Ser. No. 207,938

Int. Cl.³ F02B *43/10*

U.S. Cl. 123—3 **12 Claims**



1. An electrocombustion engine, comprising:

a cylinder having a combustion chamber at one end, the combustion chamber being sealed except for a combined input/output port;

a piston slideably and sealably disposed in the cylinder;

means for supplying only a combustible mixture of hydrogen and oxygen gases to the combustion chamber of the cylinder;

funnel-shaped valve means, having a restricted aperture at one end forming an apex directly connected to the supplying means and an unrestricted substantially larger aperture at an opposite end directly connected to the cylinder and forming at least part of a conduit between the supplying means and the input/output port, for controlling gas and fluid flow into and out of the cylinder; and,

means for igniting the combustible mixture of hydrogen and oxygen gases in the combustion chamber of the cylinder, the gases explosively recombining into a trace amount of water of such smaller volume as to form a decreasing pressure in the cylinder, the piston being first pushed outwardly by a pressure force caused by the exploding gas mixture, the funnel-shaped valve means effectively preventing dissipation of the explosive pressure force through the input/output port due to constrictive flow occurring at the apex while permitting water to be exhausted therethrough at substantially top dead center, and immediately afterward, being pulled back by the decreasing pressure formed when the exploded gas mixture recombines into the trace amount of water occupying a much smaller volume than that of the combustion chamber and that portion of the cylinder swept out by the piston, the funnel-shaped valve means with the restricted aperture effectively confining the decreasing pressure in the cylinder by permitting only enough of the combustible mixture to flow into the combustion chamber to provide a subsequent explosive charge, whereby a single charge of the combustible mixture of hydrogen and oxygen gases moves the piston in both directions.

4,332,220

POWER TOOL, ESPECIALLY POWER SAW

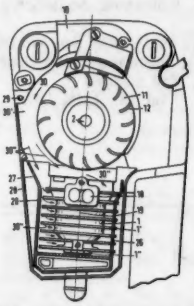
Gerd Itzrodt, Stuttgart, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,259

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911497

Int. Cl.³ F01P *1/02*

U.S. Cl. 123—41.7 **23 Claims**



5. A power tool, especially power saw, comprising:

an internal combustion engine including a cylinder, a cylinder chamber, and a piston reciprocatingly arranged in said cylinder chamber, said piston being adapted to be operated at an angle to the vertical;

a muffler, having walls and including an exhaust gas inlet, operatively connectible to said internal combustion engine to be able to receive exhaust gases from said combustion chamber; and

means, including cooling air guide walls, for moving cooling air from a source thereof to said internal combustion engine, with at least part of those walls of said muffler which are subjected to exhaust gas emanating from said cylinder chamber being arranged, when viewed in the direction of flow of cooling air, before said cylinder, and being adapted to present guide surfaces for a stream of cooling air, said muffler being a cup-shaped part having a first wall adapted to form a bottom, a first side wall for guiding cooling air, a second side wall for guiding cooling air, and further comprising:

a first exhaust gas inlet chamber;

a second exhaust gas chamber in communication with said first chamber; and

an exhaust gas outlet in communication with said second chamber, with said exhaust gas inlet of said muffler, when viewed in the direction of flow of cooling air, being arranged to extend in a direction transverse to the direction of flow of cooling air, between said first and second side walls of said muffler, and in communication with said first chamber, with said first chamber having a greater cross

section than said second chamber, a partition between said first chamber and second chamber for deflecting exhaust gas through substantially 180°, said first chamber and said second chamber including a wall provided at least in part by said first side wall and a wall provided at least in part by said second side wall with the pertaining walls of said chambers being arranged in the vicinity of said exhaust gas inlet so as to present approximately outwardly tapered wall portions near the pertaining cooling ribs of said cylinder to form a widened receiving opening for a stream of cooling air.

4,332,221

COOLING SYSTEM FOR, AND METHOD OF COOLING AN INTERNAL COMBUSTION ENGINE

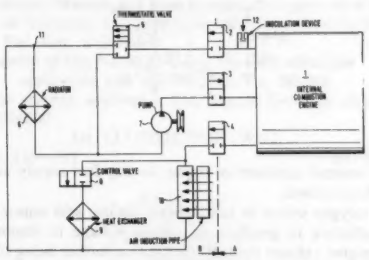
Ernst Imhof, Münchingen, and Günther Schmid, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 18, 1980, Ser. No. 113,256

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1979, 2907353

Int. Cl.³ F01P *7/00*

U.S. Cl. 123—41.08 **8 Claims**



1. A method for cooling an internal combustion engine, in which the engine is formed with an engine cooling space, and the engine further has a coolant circuit including

a radiator (6), a coolant pump (7), valves (2, 3, 4), and cooling medium conduit means connecting the valves, the radiator, and the coolant pump,

and a super-coolable cooling medium capable of retaining heat of fusion is located within said cooling circuit;

said method comprising

arranging at least two of said valves (2, 3) for hermetically isolating the engine cooling space from said coolant circuit;

providing an inoculating device (12) for imparting to said super-coolant a seed crystal;

closing two of said valves prior to a cold start of the engine and isolating the engine cooling space from said coolant circuit;

injecting a seed crystal by means of said inoculating device;

and opening said two of said valves after the temperature of the coolant in said space has risen to a temperature above the melting point thereof.

4,332,222

CAMSHAFT FOR AN INTERNAL COMBUSTION ENGINE

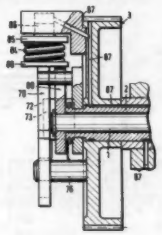
Stanislav Papez, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,697

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822147

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.17 **16 Claims**



1. In a camshaft for a drive, preferably an internal combustion engine, having a hollow shaft carrying at least one of a cam and a partial cam for rotation therewith, an inner shaft disposed within the hollow shaft and rotatable relative to the hollow shaft, the inner shaft having at least one of a cam and a partial cam disposed outside the hollow shaft attached for rotation with the inner shaft through at least one clearance in the hollow shaft, and a drive gear for driving the camshaft, the improvement comprising means on said drive gear responsive to a parameter characteristic of operating conditions of the drive for adjusting the rotational position of at least one of said inner shaft and said hollow shaft relative to the said drive gear, the adjusting means including a radially extending guide means on said drive gear, an adjustment cam having a cam surface thereon and mounted on the guide means to be radially displaceable with respect to the drive gear therealong, wherein said cam surface extends generally radially to produce, upon radial displacement of said adjustment cam, lateral adjustment of a cam follower means which bears on said cam surface, means arranged between said drive gear and said adjustment cam, responsive to said parameter, for varying the radial displacement of said adjustment cam, cam follower means including a cam follower which bears on said cam surface, thereby to be laterally displaceable by said surface in response to radial movement of said adjustment cam, and biasing means for urging said cam follower against said cam surface, and means for coupling the cam follower means to one of said inner shaft and said hollow shaft for adjusting the relative rotational position of said one shaft.

4,332,223

PLASMA FUEL IGNITORS

James M. Dalton, 253 Elm St., Salt Lake City, Utah 84107

Filed Aug. 29, 1980, Ser. No. 182,687

Int. Cl.³ F02B *19/10*; F02P *23/00*; F02B *23/00*

U.S. Cl. 123—253 **20 Claims**

1. A plasma ignitor for use with a primary combustion chamber having means for introducing a fuel/air mixture therein, said plasma ignitor comprising:

a plasma-generating chamber;

means for introducing a fuel into said plasma-generating chamber comprising:

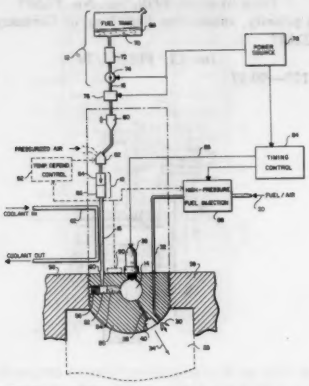
a source of pressurized fuel,

a fuel line connecting said source of pressurized fuel with said plasma-generating chamber, and

backflow restriction means interposed in said fuel line for opposing reverse flow action of said fuel therethrough

and allowing said fuel to seep forwardly therethrough at a rate being generally proportional to the pressure imposed on said fuel;

gas ionization means in contact with said plasma-generating chamber for converting said fuel within said plasma-



generating chamber into a hot ionized gas at controlled time intervals; and

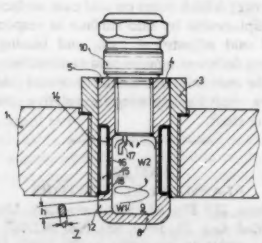
discharge nozzle means for jetting said hot ionized gas into the primary combustion chamber, said hot ionized gas serving to ignite and efficiently burn said fuel/air mixture contained in said primary combustion chamber.

4,332,224

INTERNAL COMBUSTION ENGINE WITH A MAIN COMBUSTION CHAMBER AND AN IGNITION CHAMBER

Reinhard Latsch, Vaihingen, and Hans Schlembach, Mühlacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 894,966, Apr. 10, 1978, abandoned.
This application Apr. 18, 1980, Ser. No. 141,506
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715943
Int. Cl.³ F02F *1/00*
U.S. Cl. 123—254 **19 Claims**



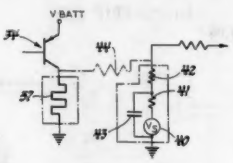
1. An internal combustion engine provided with combustion chambers, comprising a main combustion chamber and an ignition chamber, the latter being connected to the main combustion chamber by at least one spill port, further wherein the ignition chamber constitutes an elongated closed cylinder with a plane front wall and cylindrical wall only a small portion of said cylindrical wall extends into the main combustion chamber between a wall confining the ignition chamber and the adjacent cooled parts of the internal combustion engine surrounding the ignition chamber, at least one hollow space having a capillary structure within inner walls formed in said ignition chamber with capillary spaces filled with a vapourable medium and which are enabling by their capillary forces, condensated parts of said medium to be transported from cooler parts of said hollow space to hotter parts of said hollow space, said cylindrical wall further being penetrated by at least one spill port which extends essentially in a plane perpendicular to an axis of said closed cylinder and tangentially relative to the circumference of said cylindrical wall, this spill port being arranged to branch off toward the main combustion chamber, so as to be adequate for positioning said spill port to optimally provide for introduction of a flame jet exiting through said spill port into the remnant charge in said main combustion chamber, said ignition chamber further being arranged to receive a spark ignition means comprising a first electrode spaced adjacent to and insulated from said ignition chamber, the cylindrical wall-thereof forming a second electrode of said ignition means defining a spark gap between said first electrode and said cylindrical wall.

4,332,225

INTERNAL COMBUSTION ENGINE WITH OXYGEN SENSOR HEATER CONTROL

Francis G. Cox, Grand Blanc, Mich., and William J. Ricketts, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1980, Ser. No. 192,990
Int. Cl.³ F02B *3/00*; F02M *7/00*
U.S. Cl. 123—440 **2 Claims**



1. In combination:

an internal combustion engine having fuel supply and exhaust means;

an oxygen sensor in said exhaust means, said sensor being effective to generate an output voltage in response to engine exhaust content, said sensor further being characterized by an associated internal capacitance and including a separate resistive heater element with a leakage current path between the heater element and sensor stray capacitance;

closed loop control means effective to periodically sample the oxygen sensor output voltage at predetermined times and generate therefrom a fuel control signal for application to the fuel supply means;

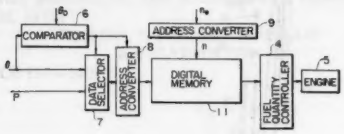
electric power supply means characterized by an output supply voltage and effective to provide electric current to the resistive heater element during received heater control signal pulses with consequent charging of the sensor internal capacitance through the leakage current path; and

means effective to generate the heater control signal pulses, each pulse beginning shortly after a sampling of the oxygen sensor output voltage and ending at least a predetermined minimum time before the next sampling of the oxygen sensor output voltage, whereby the charge on the oxygen sensor internal capacitance due the leakage current from the heater element during each heater control signal pulse may discharge prior to the subsequent sampling of the oxygen sensor output voltage and thus not adversely affect the sampled voltage.

4,332,226
ENGINE CONTROL SYSTEM

Toshio Nomura, Shiki, and Isao Kobayashi, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 210,918
Claims priority, application Japan, Dec. 28, 1979, 54/170417
Int. Cl.³ F02M *5/02*
U.S. Cl. 123—494 **18 Claims**

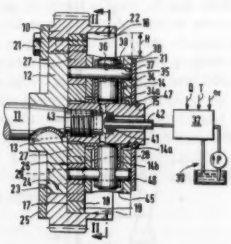


1. An engine control system comprising;
means for storing engine control data with the parameters throttle valve opening angle for regulating the quantity of air to be taken into an engine, the intake manifold depression and the engine speed,
means for reading-out said engine control data with the parameters of intake manifold depression and engine speed in light load condition and with the parameters of throttle valve opening angle and engine speed in heavy load condition, and
means for controlling the engine using the read-out data.

4,332,227
INJECTION TIMING DEVICE FOR INTERNAL COMBUSTION ENGINES

Otto Bauer, Munich; Leonbard Eberl, Unterschleissheim; Gerhard Geyer, Munich, and Max Straubel, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 48,554, Jun. 14, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 258,095
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826800
Int. Cl.³ F02M *59/20, 59/32*
U.S. Cl. 123—502 **13 Claims**

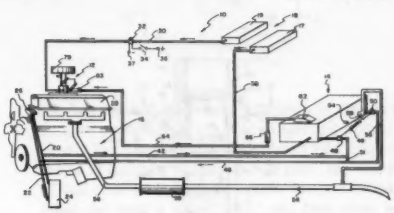


1. Injection timing device for diesel combustion engines provided with flyweights which operate in dependence on the engine speed against the force of resetting springs, said device further including an adjusting gear system for connecting an input shaft with an output shaft, said shafts further having a mutually variable rotary position, each said flyweight being directly coupled with one hydraulically operable control element, and said control element arranged to directly change the position of said flyweight, under the force of the pressure of the hydraulic medium which is variable in dependence on at least one operating parameter of the engine, further wherein said hydraulic control elements are mounted within said timing device perpendicular to the longitudinal axis of said input shaft so that they directly engage the flyweights and act radially outwardly resulting from increasing pressure on said control elements and further wherein said control elements move simultaneously with said flyweights to modify the position of said flyweights to correct the instant of injection.

4,332,228
FUEL DEVICE FOR A GASOLINE ENGINE

James J. Lehar, 1915 W. MacArthur, Lot #188, Wichita, Kans. 67217

Continuation-in-part of Ser. No. 847,836, Nov. 2, 1977, Pat. No. 4,196,710. This application Feb. 19, 1980, Ser. No. 122,423
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **15 Claims**



1. A fuel device for a gasoline engine having an exhaust system means, the device communicably connected to the engine's intake manifold, the engine fuel means, and the engine's cooling system, the device comprising:
a throttle housing mounted on top of the engine and communicably connected to the intake manifold, said throttle housing having an air intake port for receiving air, said air intake port having an air intake control valve mounted therein, said air intake control valve connected to an accelerator means of the engine, said air intake control valve attached to means extending outwardly from said air intake port with an air intake control means mounted thereon, said housing further including an air fuel intake port for receiving an air fuel mixture, said air fuel intake port having an air fuel control valve mounted therein, said air fuel control valve pivotally connected to said air intake control valve and responsive to the movement of said air intake control valve;
a reactor housing for supplying the air fuel mixture to the engine, said reactor housing communicably connected to the fuel means for supplying fuel to said reactor housing;
an air fuel supply line connected to said reactor housing and said air fuel intake port for supplying the air fuel mixture to said throttle housing;
a hot aqueous supply line and a hot aqueous return line connected to the engine's cooling system, said supply and return lines connected to an aqueous fluid circulating means mounted in the bottom of said reactor housing for heating the fuel in said reactor housing; and
a diverter exhaust conduit means interconnecting said reactor housing and said exhaust system means for conducting exhaust fumes from said exhaust system means into said reactor housing to pick-up said fuel and mix with water vapor from the exhaust system means and increase mileage while making said reactor housing non-explosive, said air fuel control valve is operatively mounted on means extending outwardly from said air fuel intake port and attached to an air fuel intake control means, said air fuel intake control means connected to one end of a connecting means, the other end of said connecting means connected to said air intake control means so that when said air intake control valve is opened said air fuel intake control valve in turn is opened, said reactor housing including heating means disposed therein and connected to an electrical power supply means of said engine; and said air intake control means and said air fuel intake control means include means for adjusting the movement of said air

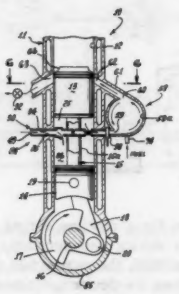
intake control valve in relation to the movement of the air fuel intake control valve for regulating the amount of air received through said air intake port in relationship to the amount of air fuel mixture received through said air fuel intake port.

4,332,229

DOUBLE INTAKE, SUPERCHARGING I.C. ENGINE

Johannes Schuit, 1433 Camino Trillado, Carpenteria, Calif. 93013

Filed Jun. 23, 1980, Ser. No. 162,117
Int. Cl.³ F02B *33/10*
U.S. Cl. 123—65 B **18 Claims**



18. In an I.C. engine having a block, the engine forming a bore and having a crankshaft, the combination comprising

(a) first and second pistons that reciprocate in said bore,

(b) connection means interconnecting said pistons, the pistons operatively connected to the crankshaft,

(c) valve casing structure operatively coupled to the block, there being a first zone in the bore between the casing structure and one piston, and a second zone between the casing structure and the other piston,

(d) the valves associated with the casing structure adapted to pass intake air into one of said zones and to exhaust compressed air out of the other of said zones in response to piston movement in one direction, and adapted to pass intake air into the other of said zones and to exhaust compressed air from said one zone in response to piston movement in the opposite direction,

(e) one of said pistons compressing the air fuel mixture in an engine combustion chamber for combustion, and including means to cool said one piston,

(f) said connection means including inner and outer elongated tubular members extending between said pistons, and said means to cool said one piston including coolant circulation passages in said members.

4,332,230

DYNAMIC ACTION HIGH POWER SLINGSHOT

Leroy P. Lozier, 1934 Highland Ave., Las Cruces, N. Mex. 88001

Filed May 5, 1980, Ser. No. 146,432
Int. Cl.³ F41B *7/00*
U.S. Cl. 124—20 R **11 Claims**

1. A slingshot comprising:

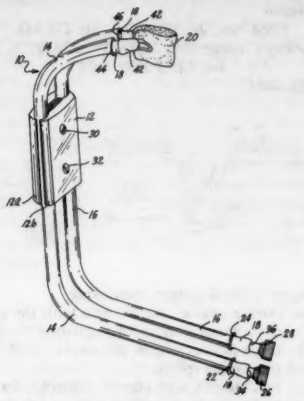
(a) hand grip means for holding the slingshot;

(b) two separate and laterally spaced, hollow yokes, disposed so as to permit parallel planes to pass therethrough throughout their lengths and defining channels therewithin and supported by said hand grip means, each of said yokes extending upwardly and rearwardly, and downwardly from said hand grip means;

(c) elastic means for projecting a projectile, said elastic means extending through said channels;

(d) pouch means connected to the other end of said elastic means for receiving a projectile; and

(e) said hand grip means being secured to said yokes and



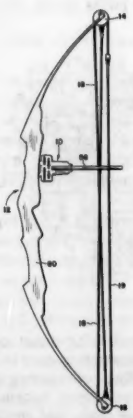
being disposed intermediate the ends of said yokes so as to provide said slingshot with a requisite high degree of balance and stability during a shooting operation of a projectile.

4,332,231

COMBINED BOW WITH A UNITARY SIGHT AND CABLE GUARD

Loyd S. Napier, 515 E. Dewey, Sapulpa, Okla. 74066, and Jim L. Pollard, Sapulpa, Okla., assignors to Loyd S. Napier, Sapulpa, Okla.

Filed May 12, 1980, Ser. No. 148,985
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—24 R **7 Claims**



1. In combination an archery bow having a bow string and cable, cable guard, sighting means for sighting on a target, said combination further including a substantially flat body member having a first portion for being secured to the bow, a second portion conterminous with the first portion and having a plurality of apertures therein for receiving said sighting means, a third portion conterminous with the second portion and extending outwardly therefrom in a direction toward the bow

string when the first portion is secured to the bow, recess means provided on the third portion, elongated rod means adjustably secured in said recess means and having the outer end thereof extending beyond the bow string, said rod means engagable with the cable for holding the cable away from the plane of the bow string during use of the bow.

4,332,232

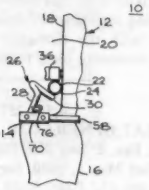
ARCHERY BOW WITH SPRING-BIASED ARROW REST

Fernando Troncoso, Jr., 1851 S. Orange Ave., Monterey Park, Calif. 91754

Filed Oct. 7, 1980, Ser. No. 194,824

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—24 R **6 Claims**



1. An improved archery bow assembly, particularly adapted for hunting, said assembly comprising in combination:

a. an archery bow having an arrow shelf and sidewall defining an arrow window;

b. an archery arrow having an arrow shaft; and,

c. an improved arrow rest disposed in said window and supporting said arrow in said window for shooting from said bow, said rest including

i. arrow spring biasing means secured to said bow,

ii. a holder comprising a hook the forward end of which contacts the bottom and outer margins of the shaft of said arrow, the inner margin of said forward end of said hook being spaced from said sidewall a distance less than the diameter of said shaft, said holder being biased by said spring biasing means into an arrow supporting position, to prevent inadvertant roll off or drop through of said arrow from said rest before shooting thereof,

iii. a side support secured to the sidewall of said bow, contacting the inner margin of said shaft and resiliently biasing said arrow in said window away from said sidewall, for improved arrow vane clearance, and,

iiii. a connector means adjustably positioning said holder in said window and connecting said holder to said bow, said arrow being releasably locked by said connector means to said bow by being trapped and held in place by said holder, said sidewall and the underside of said side support, and said shaft being spring biased by said hook's forward end upwardly against the underside of said side support.

4,332,233

BOW-STRING RELEASE DEVICE

Herman W. Knoble, 40 Moraine Rd., Pittsburgh, Pa. 15239

Filed Jun. 9, 1980, Ser. No. 157,212

Int. Cl.³ A41B *5/00*

U.S. Cl. 124—35 A **5 Claims**

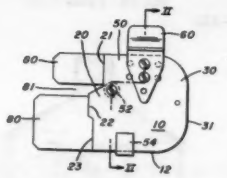
1. An archer's hand plate device adapted to be worn on an archer's hand when drawing and releasing a bow string and arrow, the device designed to increase accuracy and reproducibility in groups of shots, the device comprising:

(a) a base plate designed to fit in the palm of the archer's hand and to keep the back of said hand substantially flat and in line with fingers of the hand up to the first joint thereof, thereby maintaining knuckles of said fingers in line, the base plate being substantially flat and having,

(i) a leading edge,

(ii) a rear portion,

(iii) a top portion, said top portion connecting the leading edge and the rear portion, the leading edge having a first portion and a second portion, said first portion of the leading edge of the base plate located rearward of said second portion of the leading edge, said first and second portion of the leading edge extending to about



the first joint of the index and middle of fingers of said hand to make at least the index finger and middle finger of said hand bend at the first joint of said fingers when the hand is closed about said base plate, the rear portion of said plate adapted to fit against the heel of said hand when the hand is closed about said base plate, and

(b) a finger spacer mounted on said base plate to fit between said index finger and said middle finger.

4,332,234

GUN SYSTEM WITH BARREL OPENING SEALED OFF BY PROJECTILE

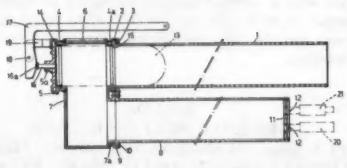
Roger F. Allen, Bex, Switzerland, assignor to Plumettaz S.A., Bex, Switzerland

Filed Mar. 30, 1981, Ser. No. 249,335

Claims priority, application European Pat. Off., Apr. 11, 1980, 80810123.2

Int. Cl.³ F41F *1/04*

U.S. Cl. 124—73 **9 Claims**



1. A gun system of the type comprising apparatus capable of propelling a useful load towards its place of intended use and a projectile for holding said useful load, said apparatus including a barrel having a sidewall, wherein the improvement comprises:

an enclosure disposed adjacent to said barrel and designed to contain compressed air at full pressure prior to the firing of the projectile,

at least one opening made in said sidewall of said barrel, said enclosure communicating with said barrel through said opening, and said opening being sealed off by said projectile when said projectile is in firing position and substantially the full pressure of the compressed air in said enclosure is bearing against the side of said projectile, and

a firing mechanism, powered by a second mechanism independent of the compressed air in said enclosure, capable of moving said projectile within said barrel by a distance sufficient to uncover said opening whereupon said full pressure substantially immediately bears upon said projectile at the rear thereof to fire the same.

4,332,235

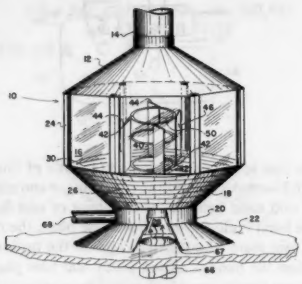
ROTATING AIR DRAFT FIREPLACE

Harold W. Hannebaum, P.O. Box H, Shoshone, Id. 83352

Continuation-in-part of Ser. No. 943,842, Sep. 19, 1978, Pat. No. 4,273,096, which is a continuation-in-part of Ser. No. 843,827, Oct. 20, 1977, Pat. No. 4,181,117, which is a continuation-in-part of Ser. No. 762,014, Jan. 24, 1977, abandoned. This application Mar. 24, 1980, Ser. No. 133,210

Int. Cl.[3] F24B 1/18

U.S. Cl. 126—120 7 Claims



1. An enclosed fireplace in which a fire chamber, fitted with means to introduce intake air into said chamber, is formed by vertical walls fitted with first non-moveable means to impart a rotational movement in the fire chamber, to intake air entering the fire chamber, with said fireplace fitted with second non-moveable means to impart a further rotational movement, in the same direction, to the air already in the fire chamber that approaches a central location of the fire chamber in which a supply of fuel may be located, so as to cause a rotating draft of intake air about burning fuel located in said central location of the fire chamber,

in which the first said non-moveable means comprise a plurality of vertical tubes mounted in the fire chamber adjacent to the vertical walls of the chamber, with each tube joined at its base to a duct leading to a supply of intake air, and with a vertical exit slit extending substantially the length of each tube and located so as orient air exiting from said slit in a common circular direction in the fire chamber.

4,332,236

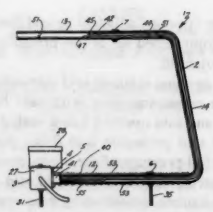
FIREPLACE HEAT EXCHANGER

Richard A. Stora, 434 Hill Lake Ave., Wayland, Mich. 49348, and Edward J. Chase, Jr., 1400 11 Mile Rd., NE., Comstock Part, Mich. 49321

Filed Feb. 25, 1980, Ser. No. 124,520

Int. Cl.[3] F24B 7/00; F24F 3/14

U.S. Cl. 126—121 19 Claims



1. A fireplace heat exhanger, comprising:

a plurality of laterally spaced apart heat transfer tubes, each having a body shaped for placement in a firebox, and including a lower end thereof shaped to draw cool room air into the tubes, a medial portion adapted for positioning adjacent a source of heat and transferring heat to the cool air, and an upper end shaped to expel the heated air into the room;

a plurality of mounting plates, each being connected with a different one of said tubes at the lower end thereof;

a header extending along the lower end of each of said tubes and communicating therewith for flowing air into the heat exchanger;

removable fastener means for individually connecting each of said mounting plates to said header; and

at least one bracket detachably interconnecting each of said tubes, and being disposed at a position spaced apart from said header, whereby a damaged heat transfer tube can be easily removed from said heat exchanger and replaced by disassembling said bracket, loosening the fastener means associated with the damaged tube, and detaching the associated mounting plate from said header.

4,332,237

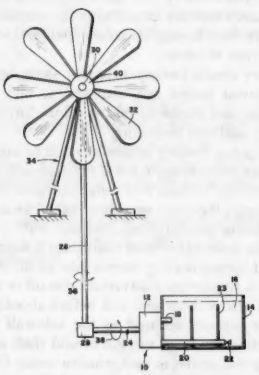
HEAT GENERATOR APPARATUS

Paul G. Kelsey, Rte. 2, Box 876, Claremore, Okla. 74017

Filed May 1, 1980, Ser. No. 145,450

Int. Cl.[3] F24C 9/00; F22B 9/06

U.S. Cl. 126—247 1 Claim



1. In combination with a windmill having adjustable rotatable blades, a heat generator apparatus comprising pump means operably connected with the windmill for actuation thereby and having fluid inlet and fluid outlet means, a fluid reservoir having a fluid supply in simultaneous communication with both the fluid inlet and fluid outlet means of the pump means whereby the fluid is continuously circulated from the reservoir and through the pump means and back to the reservoir during actuation of the pump means, and restrictive valve means provided in the fluid outlet means for heating of the fluid discharging from the pump means whereby the temperature conditions in the fluid reservoir may be increased to an optimum heating of the fluid for use in a heating operation, the pump means is provided with drive shaft means, and coupling drive means is interposed between the drive shaft means and the windmill to rotate the drive shaft means for actuation of the pump means, and wherein the coupling drive means comprises a substantially vertical rotatable shaft having one end operably connected with the rotatable blades for rotation of the vertical shaft about its own longitudinal axis, and coupling means interconnected between the vertical shaft and the drive shaft for transmitting rotation to the drive shaft for actuation of the pump means, the fluid reservoir includes housing means for containing the fluid therein whereby the level of the fluid encompasses both the fluid inlet and fluid outlet means and

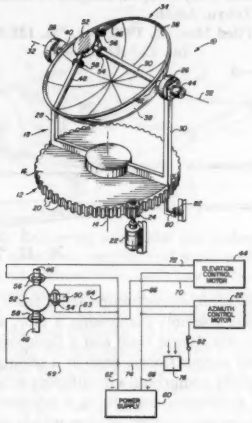
baffle means provided in said housing means for controlling the flow of the fluid during the circulation thereof through the fluid reservoir.

4,332,238

SOLAR TRACKING SYSTEM

Raul Garcia, Jr., 6244 S. 41st Ave., Phoenix, Ariz. 85041

Filed Mar. 27, 1980, Ser. No. 134,542
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—425 **4 Claims**



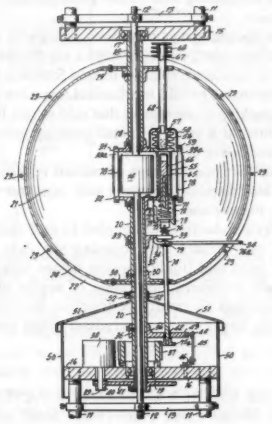
1. A sun tracking solar energy collector comprising:
(a) an azimuth frame mounted for rotation about a vertical axis;
(b) a first reversible motor coupled to rotatably drive said azimuth frame;
(c) frame means on said azimuth frame for rotation therewith, said frame means defining a horizontal axis;
(d) a reflector carried on said frame means for rotation about the horizontal axis, said reflector adapted to reflectingly concentrate solar radiation into a focal point;
(e) a second reversible motor coupled to rotatably drive said reflector about the horizontal axis;
(f) a solar energy absorber mounted at the principal radiation focal point produced by said reflector;
(g) a first heat sensor means proximate and laterally spaced from said absorber and coupled to said first motor, said first heat sensor means for sensing the heat present at the radiation focal point to detect movement of the radiation focal point away from said absorber as a result of the azimuthal movement of the sun and responding thereto by enabling operation of said first motor to drive said azimuth frame and thereby said reflector in one direction an amount necessary to move the focal point back onto said absorber;
(h) second and third heat sensor means coupled to said second motor proximate and spacedly mounted on opposite sides of said absorber for sensing the heat present at the radiation focal point to detect movements of the radiation focal point away from said absorber due to elevational changes in the sun's movement path and responding thereto by enabling operation of said second motor to drive said reflector in the direction and in the amount needed to move the radiation focal point back onto said absorber; and
(i) sensor means in the form of a light sensitive device in the circuit which supplies power for operating said first reversible motor in the opposite direction, said sensor means having a first state which opens the circuit in which it is mounted upon sensing the presence of light and having a second state which completes that circuit when the absence of light is sensed upon completion of the diurnal cycles to enable said first reversible motor to drive said azimuth frame and thereby said reflector to a position which faces the starting point of subsequent diurnal cycles of the sun.

4,332,239

SUN POWERED AUTOMATIC SUN FOLLOWING REFLECTOR

William Hotine, Box 216, Albion, Calif. 95410

Filed Oct. 27, 1980, Ser. No. 201,080
Int. Cl.[3] F24J *3/02*; G05D *11/00*; G01J *1/20*
U.S. Cl. 126—425 **6 Claims**

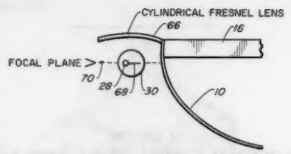


1. A solar powered sun following reflector comprising:
(a) a substantially rigid frame,
(b) spaced bearings carried by the frame,
(c) a first and a second elongated trunnion tube rotatably carried at each outer end in the spaced bearings and disposed along a common equatorial axis, said trunnion tubes being spaced from each other at their unsupported inner ends,
(d) a reflector having a substantially hemispherical shape diametrically secured to the trunnion tubes,
(e) a first and a second fluid conduit secured at their outer ends to the frame, extending inwardly toward the center of the reflector and spaced from each other at their inner ends,
(f) a heat exchanger operatively coupled between the inner ends of the first and second fluid conduits and disposed at the focal point of the reflector,
(g) reflector drive means carried by the trunnion tubes, positioned in the focal plane of the reflector and laterally of the heat exchanger,
(h) ratchet means operatively coupled between the drive means and the reflector whereby solar energy directed upon the drive means by the reflector when the solar rays are displaced from the heat exchanger will return the reflector to its optimum position with respect to the heat exchanger.

4,332,240
SOLAR-ENERGY-POWERED SUN TRACKER

Carter J. Ward, 604 Sunfish Way, Port Hueneme, Calif. 93041

Division of Ser. No. 69,665, Aug. 24, 1979, Pat. No. 4,262,654.
This application Dec. 29, 1980, Ser. No. 220,675
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—425 8 Claims

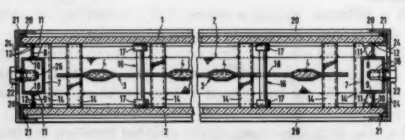


1. A solar-powered sun-tracking apparatus comprising:
a. fluidic sensing means responsive to rays of radiant energy for producing a fluidic pressure;
b. means for translating said fluidic pressure into a mechanical force;
c. means for focusing rays of radiant energy on said fluidic sensing means when said rays have a predetermined range of angles of incidence relative to said focusing means; and
d. means responsive to said mechanical force for positioning said sun-tracking apparatus so that said means for focusing is maintained at a predetermined position relative to the angle of incidence of said rays;
e. said means for focusing rays of radiant energy including:
a fresnel lens disposed between said rays and said fluidic sensing means; and
a thermally-conductive fin coupled to said fluidic sensing means, said fresnel lens focusing the rays of radiant energy onto said fluidic sensing means when said rays have said predetermined range of angles of incidence and onto said thermally conductive fin for angles of incidence larger than said predetermined range.

4,332,241
SOLAR ENERGY COLLECTOR PANEL

Rolf Dalstein; Johann Spies; Hans-Dieter Greif, all of Stuhr; Günter Termath; Jürgen Unbescheid, both of Gelsenkirchen-Buer, and Hans-Werner Nowoczyn, Aachen, all of Fed. Rep. of Germany, assignors to Erno Raumfahrttechnik GmbH, Bremen, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,550
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951362
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—450 14 Claims

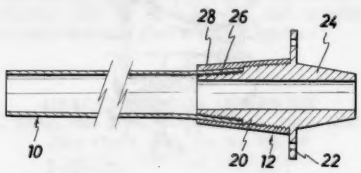


1. A solar energy collector panel, comprising:
a first and second prestressed silicate glass plate;
a spacing frame for supporting the glass plates in spaced-apart relationship, the spacing frame including
(i) a warp-resisting frame portion;
(ii) yielding and deformable, upstanding metal bars soldered to said frame portion and to metalized portions of the glass plates, for sealing an interior space as defined by and between said glass plates and said frame; and
an absorption means disposed in said space.

4,332,242
GUIDE TUBE ASSEMBLY

Toshio Chikama, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 135,995
Int. Cl.[3] A61B 1/00
U.S. Cl. 128—3 1 Claim

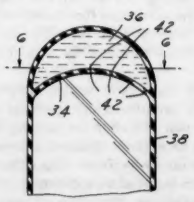


1. In combination, an endoscope and a guide tube assembly, said guide tube assembly comprising a tube, said tube being made of a porous fluoric resin and a fluorocarbon elastomer coated on said porous fluoric resin as a sealing material, said guide tube further comprising a mouthpiece which is formed as a surface of revolution comprising a connector portion for holding the tube, an extended portion which spreads from the connector portion and a mouthpiece portion, and at least one suction aperture being provided at the extended portion of the mouthpiece, wherein the surface of the mouthpiece portion is tapered, said endoscope passing through said tube, said tube formed of an inner surface of low friction.

4,332,243
DEVICES AND METHODS FOR THE PREVENTION OF TRANSMISSION OF VENEREAL DISEASE AND NON-GONOCOCCAL GENITAL INFECTIONS

Morton Gutnick, 8329 Fairview Rd., Elkins Park, Pa. 19117

Filed Apr. 4, 1980, Ser. No. 137,306
Int. Cl.[3] A61F 13/00
U.S. Cl. 128—132 R 8 Claims

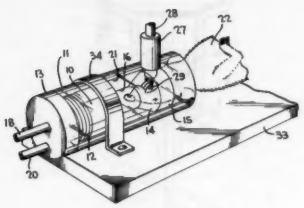


1. A method of treating and preventing venereal disease and providing birth control which comprises encapsulating a liquid venereal disease preventing medication in the distal end of a condom, providing an easily burstable wall in the encapsulation, and causing release of said medication by rupture of the burstable wall of the encapsulation during intercourse to protect the participants.

4,332,244
MASK FOR THE SAFE DELIVERY OF INHALATION GASES TO SMALL LABORATORY ANIMALS

David E. Levy; Alfred Zwies, both of New York, and Thomas E. Duffy, Mamaroneck, all of N.Y., assignors to The Government of the United States as represented by the Secretary of Department of Health and Human Services, Washington, D.C.

Filed Oct. 8, 1980, Ser. No. 195,188
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—205.25 7 Claims



1. A mask for delivering anesthetic gas under pressure for inhalation by a laboratory animal, said mask comprising:

first and second hollow tubes, each having first and second ends, wherein said first tube is secured within said second tube in spaced relation from said second tube to define an aspiration chamber between the tubes, said first end of said first tube being longitudinally recessed from the first end of said second tube, said first tube having a snout-receiving means at its first end for receiving a snout of said laboratory animal in a loose fitting engagement, said snout-receiving means being surrounded by said aspiration chamber;

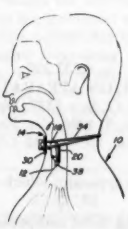
means for supplying said anesthetic gas under pressure to said snout-receiving means of said first tube; and

means for aspirating gas from said aspiration chamber to prevent anesthetic gas which is not inhaled by said laboratory animal from leaking into the ambient environment.

4,332,245
EMERGENCY TRACHEA AIRWAY

Frank J. Boone, Sr., 312 N. 12th St., Murray, Ky. 42071

Filed Aug. 19, 1980, Ser. No. 179,931
Int. Cl.[3] A61M *25/02, 25/00*
U.S. Cl. 128—207.17 7 Claims

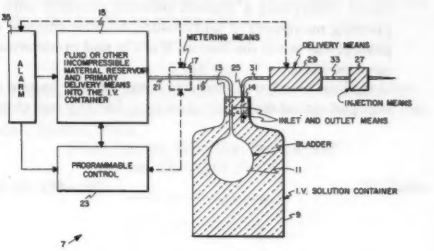


1. An emergency trachea airway, said airway including an inverted generally L-shaped tubular body including generally right angularly disposed tube sections intersecting at one pair of ends thereof, a first end of one tube section remote from the other tube section including a beveled diametrically reduced terminal end beveled toward the first end and to the side of the one tube section opposite the side thereof from which the other tube section projects, said other tube section including an enlarged abutment flange thereon intermediate said one tube section and the free end of the other tube section, said diametrically reduced terminal end being eccentrically positioned relative to the longitudinal center line of the second end of said one tube section toward the side of said second end of said one tube section remote from the side of said one tube section from which the other tube section projects, the side of said diametrically reduced terminal end corresponding to the side of the second end of the one tube section from which the other tube section projects being inwardly offset from the corresponding side of the second end of said one tube section, the wall portion of said tubular body connecting the inwardly offset side of the terminal end with the corresponding side of said second end of said one tube section being outwardly inclined from said inwardly offset side toward said other tube section.

4,332,246
POSITIVE DISPLACEMENT INTRAVENOUS INFUSION PUMP DEVICE AND METHOD

Thomas H. Thomson, Boulder, Colo., assignor to Staodynamics, Inc., Longmont, Colo.

Filed Jun. 30, 1980, Ser. No. 164,105
Int. Cl.[3] A61M *5/14*
U.S. Cl. 128—214 F 25 Claims



1. In a positive displacement infusion device for injecting a solution from a container through a discharge means into a patient, delivery means for introducing an incompressible material into said container to cause said solution stored therein to be displaced from said container through said discharge means in an amount proportional to the amount of incompressible material introduced into said container, said delivery means including control means for controlling introduction of said incompressible material into said container whereby solution is discharged from said container through said discharge means in a predetermined manner.

4,332,247
ADMINISTRATION SET INCLUDING BURETTE WITH PIVOTABLE AIR VALVE

Herbert Mittleman, Deerfield, and Gordon P. Boland, Lake Zurich, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 938,063, Aug. 30, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 170,399
Int. Cl.[3] A61M *5/14*
U.S. Cl. 128—214 C 9 Claims

1. In an administration set including a burette having a burette chamber and a main liquid inlet, an injection site and an air valve communicating with said chamber, and a drip chamber connected downstream of the burette chamber, the improvement comprising, in combination:

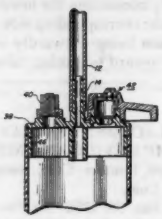
said air valve comprising a stationary port extending from a top portion of said burette chamber and defining a bore therethrough;

said port including a fitting shaped to define an open internal portion, a top portion of said fitting shaped to define a passageway, said fitting closing said port except for said passageway, with said passageway being substantially smaller than said open internal portion;

a pivotable closure overlying said port and being pivotally

connected therewith, said pivotable closure shaped to define an opening for communication with said passageway when said closure is pivoted to a predetermined open position; and

means for segregating said closure opening and said passageway when said closure is not in said predetermined open position; and a filter member located transverse said bore



and directly underlying said passageway, said segregating means comprising a resilient member movable with the pivoting movement of said closure, to close and seal said passageway when the closure is not in said predetermined open position,

said resilient member comprising a ball carried by said closure and spaced from said opening defined by said closure.

4,332,248

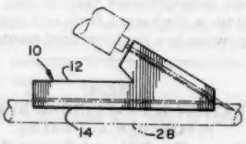
MEDICAL APPARATUS

Thomas N. DeVitis, 803 Adams Dr., Brookhaven, Pa. 19015

Filed Jul. 31, 1980, Ser. No. 174,167

Int. Cl.³ A61M *05/00*

U.S. Cl. 128—214 R **4 Claims**



1. A device for laterally restraining a fluid conduit comprising:

first and second legs spaced apart from each other; and

body means having a longitudinal axis and connecting said legs at a distance from their distal ends, said body means including:

a space along its longitudinal axis for receiving a fluid conduit therein;

upper and lower horizontal surface parallel to each other and to the longitudinal axis of said body means;

a third surface inclined to the axis of said body means and connecting the upper and lower surfaces of said body means, said inclined surface having a V-shaped groove formed therein, said groove terminating in said first and second legs; and

a second inclined surface orthogonal to said first inclined surface and connecting said first inclined surface with the upper surface of said body means.

4,332,249

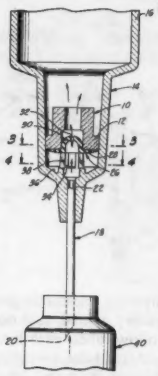
FILTER AND VALVE ASSEMBLY FOR HYPODERMIC SYRINGE

Joel A. Joslin, Sunset Hills, Mo., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed Aug. 1, 1980, Ser. No. 174,548

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—218 NV **10 Claims**



1. In an apparatus for injecting filtered medicinal fluids; said apparatus including a generally tubular member having a chamber therein and a filter element disposed within said chamber; said filter element having a proximal end, a distal end and a central unobstructed passage extending longitudinally therethrough; and valve means operatively associated with said filter element; the improvement comprising:

said valve means being responsive to increased pressure on the distal end of said filter element to open and permit the flow of medicinal fluid through said central unobstructed passage of said filter element; said valve means being responsive to increased pressure on the proximal side of said filter element to block said central passage of said filter element, thereby requiring medicinal fluid under pressure at the proximal end of said filter element to flow through said filter element and be filtered thereby.

4,332,250

EQUINE SANITATION APPARATUS AND METHOD

Charles A. Behney, P. O. Box 4337, Bisbee, Ariz. 85603

Filed Jul. 7, 1980, Ser. No. 164,785

Int. Cl.³ A61M *3/00*

U.S. Cl. 128—239 **19 Claims**

1. Equine sanitation apparatus which comprises, in combination,

a supply tube having distal and proximal ends,

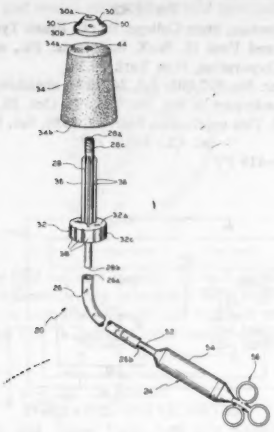
nozzle means on the distal end of said tube and defining discharge openings therein,

manipulating means on said tube and spaced apart longitudinally from said nozzle means in the direction of the proximal end of the tube, and

a sponge on said tube between said nozzle means and said manipulating means,

whereby said manipulating means may be manually operated to insert said nozzle means and said sponge into an equine sheath cavity and manipulate the sponge therein, and a liquid may be supplied to and exhausted from the cavity

via said tube and said nozzle means so as to flush the cavity through said discharge openings and thereby



loosen smegma in the cavity and remove the smegma therefrom through the discharge openings.

4,332,251

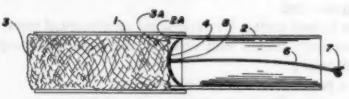
INSERTION DEVICE

James Thompson, Harrods Creek, Ky. 40027

Filed Nov. 14, 1980, Ser. No. 206,721

Int. Cl.³ A61F *15/00*

U.S. Cl. 128—263 **1 Claim**



1. An insertion device for insertion of a soft deformable tampon made of resilient deformable material where the insertion device includes a pair of telescoping elements including a first tube and a second tube of lesser diameter to be received in the first tube where a portion of the tampon is received in compressed condition within the first tube with an end of the second tube, bearing on the innermost end of the tampon and a generally planar flexible, deformable stop means carried by a string means and movable therealong where one end of the string is attached to the innermost end of the tampon, second stop means provided at the opposite end of the string means to prevent release of the first stop means from the string and the first stop means is adapted to be received in flexed condition within the tube means.

4,332,252

DRAINAGE RECEPTACLE WITH SUPPORT MEMBER

Rebecca S. Taylor, Palatine, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 11, 1980, Ser. No. 167,492

Int. Cl.³ A61F *5/44*

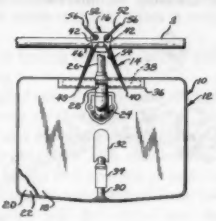
U.S. Cl. 128—275 **8 Claims**

1. A drainage receptacle, comprising:

a container having a chamber for receiving body fluids and a pair of spaced apertures adjacent an upper portion of the container;

a support member having a pair of spaced openings and a hook; and

an elongated cord passing through said apertures with an end portion extending from each of the apertures and a central portion extending between said apertures, said end portions of the cord being received in said openings of the support member and said cord central portion being received on said hook, said support member having means



for frictionally engaging and slidably receiving said end portions of the cord in said openings such that said end portions may be adjusted in said openings and such that the height of the receptacle may be adjusted during the time the receptacle is being filled.

4,332,253

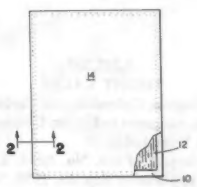
DISPOSABLE DIAPER AND TOP SHEET THEREFOR

Peter J. Schoots, Walpole, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Apr. 15, 1980, Ser. No. 140,616

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—287 **8 Claims**



1. In a disposable diaper having a water-resistant backing sheet, a layer of absorbent material, and a top sheet arranged to be placed in contact with the skin, the improvement comprising a top sheet having a fibrous textile web impregnated with a polymeric binder in which at least 1% by weight of the binder consists of combined 2-ethyl hexyl acrylate.

4,332,254

SYSTEM FOR FILLING AND INFLATING AND DEFLATING A VASCULAR DILATING CATHETHER ASSEMBLY

Ingemar Lundquist, Oakland, Calif., assignor to Advanced Catheter Systems, Inc., Palo Alto, Calif.

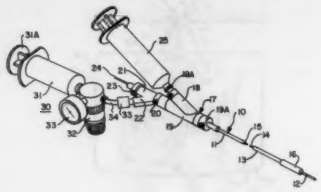
Filed Nov. 17, 1980, Ser. No. 207,732

Int. Cl.³ A61M *29/02, 25/00*

U.S. Cl. 128—344 **21 Claims**

1. In apparatus for the rapid inflation and deflation of a balloon-type dilating catheter assembly, a pistol grip housing adapted to be held in one hand and having spring loading actuator means mounted thereon adapted to be operated by a portion of said hand holding said housing between a released, balloon deflated position and an actuated balloon inflated position; pump means at least partly carried by said housing coupled to said actuator means to be actuated thereby, said pump means including a pump chamber adapted to be connected to said catheter assembly and piston means coupled to said actuator means for altering the fluid holding volume of

said pump chamber; latching means carried on said housing for holding said actuating means in a catheter fill position intermediate said released, balloon deflation position and an actuated, balloon inflation position; and fill port means carried on said pump chamber for filling said pump chamber and said catheter assembly with a relatively incompressible fluid when said



actuator means is latched in said catheter fill position, whereby a balloon deflating vacuum is automatically produced in said pump chamber when said actuator means is in said released position and a balloon inflating pressure is produced in said pump chamber when said actuator is operated to an actuated, balloon inflation position.

4,332,255

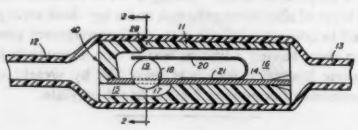
SHUNT VALVE

Salomon Hakim, Bogota, Colombia, and Carlos A. Hakim, Fort Lauderdale, Fla., assignors to Hakim Company Limited, Saint Vincent, British West Indies

Continuation-in-part of Ser. No. 2,354, Jan. 10, 1979, abandoned. This application Sep. 23, 1980, Ser. No. 190,018

Int. Cl.³ A61M *27/00*

U.S. Cl. 128—350 V **7 Claims**



1. In a surgically implantable shunt system in which cerebrospinal fluid is vented from a cerebroventricular catheter to a drainage catheter, a valve for presenting a precisely controllable back pressure to the ventricles, said valve comprising:

an elongate, hollow valve body;

a flat plate partitioning said valve body so as to form an inlet chamber and an outlet chamber, said ventricular catheter being coupled so said inlet chamber and said drainage catheter being coupled to said outlet chamber, said plate being provided with a circular aperture connecting said inlet and outlet chambers;

a spherical ball of diameter larger than said aperture for controllably restricting flow through said aperture; and

a spring including a cantilevered flat portion overlying said ball and biasing it against the circular periphery of said aperture whereby a circular seal is selectively effected between said ball and said plate, providing a precisely defined back pressure with low hysteresis and low susceptibility to bridging by debris.

4,332,256

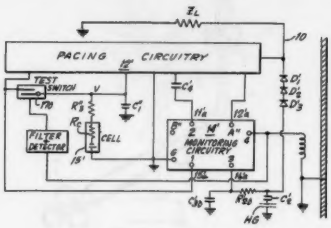
SYSTEM FOR MONITORING HERMETIC INTEGRITY, PACING PULSE AND LOAD IMPEDANCE IN CARDIAC PACERS

Robert R. Brownlee, State College, Pa.; G. Frank Tyers, Galveston, Tex., and Paul H. Neff, Bellefonte, Pa., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 927,005, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 736,491, Oct. 28, 1976, Pat. No. 4,142,533. This application Mar. 12, 1980, Ser. No. 129,427

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PT **11 Claims**



1. A cardiac pacemaker comprising:

an hermetically sealed casing;

electrode means extending out of said casing for conducting electrical signals including cardiac R-wave signals from and cardiac pacing pulses to the heart of a patient;

pacing circuitry means in said casing and connected to said electrode means for producing said pacing pulses;

telemetry means in said casing for telemetering electrical signals out of said casing indicative of electrical inputs thereto; and

means in said casing for producing an electrical input to said telemetery means indicative of the hermetic integrity of said casing.

7. In a pacemaker system comprising:

casing means for implantation in a patient;

electrode means connected to said casing means for conducting electrical signals including cardiac pacing pulses to the heart of a patient;

pacing circuitry means in said casing means and connected to said electrode means for producing said pacing pulses;

telemetry means in said casing means for telemetering out of said casing means electrical signals indicative of electrical inputs thereto; and

power source means in said casing means for powering said pacing circuitry means and said telemetry means; the improvement comprising:

integrating means in said casing means and connected to said pacing circuitry means and between said power source means and said telemetry means for sensing and integrating the current pulse from said power source means upon the production of each pacing pulse and providing an indicative electrical input to said telemetry means.

4,332,257

MEDICAL CLIP AND ELECTRODE CONSTRUCTIONS

George E. Ayer, Naperville, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 11, 1980, Ser. No. 120,422

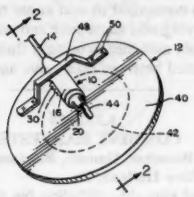
Int. Cl.³ A61B *5/04*

U.S. Cl. 128—640 **25 Claims**

1. A terminal clip and electrode set for use with instruments such as medical monitoring instruments or the like, comprising:

a terminal clip including a support member, and a conductive member mounted on the support member and adapted for engaging terminal means of an electrode; and

an electrode adapted for attachment to an anatomical body member of a patient, said electrode including terminal means for engaging said conductive member of said terminal clip, and means remote from said terminal means for



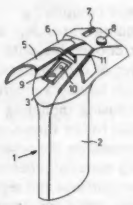
engaging said support member of said terminal clip to hold said terminal clip in position with said conductive member in engagement with said terminal means of the electrode and to prevent relative movement therebetween.

4,332,258

PORTABLE PULSE METER

Asajiro Arai, and Yasuo Ugai, both c/o Kabushiki Kaisha Yamaoka Seisakusho, 93, Yokomichi, Hirakawa, Joyo, Kyoto, Japan

Filed Sep. 29, 1980, Ser. No. 191,706
Int. Cl.³ A61B 5/02
U.S. Cl. 128—666 **6 Claims**



1. A portable physiological pulse meter comprising a rigid body, a detector plate provided with a light source and a photoelectric element for detecting the light from said source as reflected by a blood stream in a blood vessel in a portion of human anatomy brought into proximity with said detector plate, and means for resiliently mounting said detector plate on said rigid body so that said detector plate is omnidirectionally movable relative to said body so as to minimize relative movement between said detector plate and said portion of said human anatomy, thereby minimizing measurement noise.

4,332,259

INTRAVENOUS CHANNEL CARDIAC ELECTRODE AND LEAD ASSEMBLY AND METHOD

Charles E. McCorkle, Jr., 1427 E. Bayview Dr., Tempe, Ariz. 85283

Filed Sep. 19, 1979, Ser. No. 76,910
Int. Cl.³ A61N 1/04
U.S. Cl. 128—786 **16 Claims**

1. A lead assembly for intravenously conducting electrical signals to or from a patient's heart, the lead assembly comprising in combination:

a. a core lead having first and second ends, said core lead including

i. first flexible sleeve means;

ii. a first conductor surrounded by material of said first flexible sleeve means, said first conductor extending approximately between the first and second ends of said core lead;

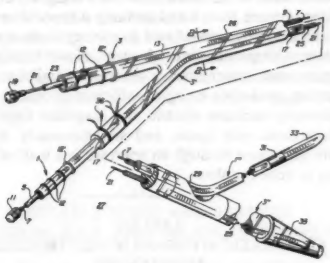
iii. first electrode means attached to said first flexible sleeve means approximately at the first end of said core lead, said first electrode means being electrically connected to said first conductor;

b. a first removable stylet extending through said first flexible sleeve means to facilitate control of said core lead, said core lead being preformed to tend to assume a straight configuration when said first stylet is removed from said core lead;

c. a channel lead having first and second ends, said channel lead including

i. second flexible sleeve means, said second flexible sleeve means having an elongated channel for receiving said core lead, said channel extending through a major portion of the length of said channel lead, said channel extending from a first opening in said channel lead to a second opening in said channel lead, said first opening being located at said first end of said channel lead, said second opening being a side port opening located a first predetermined distance from said second end of said channel lead;

ii. a second conductor surrounded by material of said second flexible sleeve means, said second conductor being disposed outside of said channel and extending approximately between the first and second ends of said second flexible sleeve means;



iii. second electrode means attached to said second flexible sleeve means approximately at the first end of said channel lead, said second electrode means being electrically connected to said second conductor; and

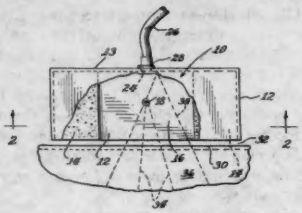
d. a second removable stylet extending through said second flexible sleeve means to facilitate control of said channel lead, said core lead being disposed in said channel of said channel lead, the first end of said core lead extending from said first opening and the second end of said core lead extending from said second opening, said first opening being located within the patient's heart when said channel lead is positioned to conduct the electrical signals to a predetermined portion of the patient's heart, said channel lead being performed to tend to assume a bent, J-shaped configuration located approximately at the location of said side port opening to cause said second end of said channel lead to move into the atrial appendage of the patient's heart when said second stylet is removed, said side port opening being located near the lowest portion of said bent, J-shaped configuration when the second end of said channel lead is in the highest or superior portion of the atrial appendage, said core lead extending through said side port opening deep into the right ventricle of the patient's heart.

4,332,260

EXTERNAL MICROWAVE APPLICATOR AND METHOD

James I. Bicher, 2623 Worchester, West Bloomfield, Mich. 48033; Taljit S. Sandhu, 1350 W. Bethune, Apt. 1106, Detroit, Mich. 48202, and Fred W. Hetzel, 19324 Addison, Southfield, Mich. 48075

Filed Jun. 17, 1980, Ser. No. 160,216
Int. Cl.³ A61N *1/40*
U.S. Cl. 128—804 **11 Claims**



1. The method of irradiating the skin surface of a patient with microwaves of a frequency of 250 to 353 MHz for treating tumors, which comprises:

overlaying, in spaced relation, the skin surface to be treated with a conductive metal housing having an open bottom overlaying said skin and having closed walls on all other sides, the interior of said housing carrying a pair of opposed slabs of dielectric material having a dielectric constant of more than 4 and defining a space therebetween;

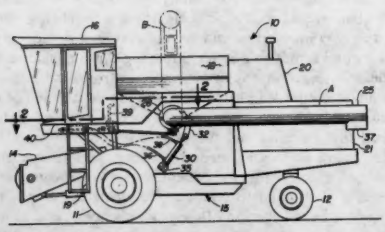
radiating microwaves of said frequency from a microwave antenna projecting through a wall of said housing into said space, said antenna being generally parallel to said open bottom, said slabs being of sufficient thickness to provide generally uniform electric and magnetic field intensities throughout said space; and simultaneously blowing air into said space through an aperture in a wall of said housing to cool the skin.

4,332,261

AUTOMATIC HYDRAULIC NEUTRALIZING MECHANISM

E. Graham Webster, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 24, 1980, Ser. No. 190,152
Int. Cl.³ A01D *90/10*
U.S. Cl. 130—27 R **1 Claim**



1. In a harvesting and threshing machine for harvesting crop material from the field, said machine having an operator station, the improvement comprising:

a movable control arm in the operator's station;

a plate movably connected to the machine, said arm fixedly connected to said plate;

a fluid directional control valve connected to the machine;

a first member interconnecting said plate and said valve;

an auger tube including an unloading auger, said auger tube being movably connected to said machine via a stationary auger ring;

a tab pivotally connected to said ring;

a second member interconnecting said plate and said tab;

a first stop connected to said auger tube;

a second stop connected to said auger tube; and

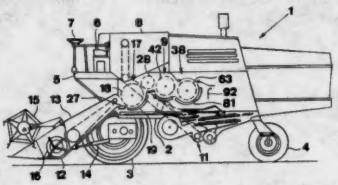
means for moving said auger tube and said stops into contact with said tab, said means being a fluid powered cylinder interconnected between said valve and said auger tube.

4,332,262

COMBINE HARVESTER

Cyriel R. J. De Busscher, Damme, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 13, 1980, Ser. No. 206,739
Claims priority, application United Kingdom, Nov. 14, 1979, 7939370
Int. Cl.³ A01D *45/00*
U.S. Cl. 130—27 P **28 Claims**



1. A combine harvester comprising:

a transversely extending threshing mechanism having a threshing cylinder cooperable with a threshing concave for threshing a layer of crop material fed therebetween;

a separating mechanism having a separator rotor cooperable with a separator housing including a separator concave and disposed parallel to the threshing mechanism;

crop layer dividing means on the separator rotor for dividing the layer of crop material received from the threshing mechanism into two portions and separator means extending lengthwise of the rotor and arranged spirally to convey said portions of the crop layer received from the threshing mechanism around said rotor in opposite directions to the opposite ends of the separating mechanism while submitting the crop material to a separating action;

the crop layer dividing means being formed by crop layer divider blades disposed in pairs around the circumference of the separator rotor and at opposed angles relative to the direction of rotation in a manner defining V-shapes having their apexes facing in the direction of rotation; and

the leading edges as seen in the direction of rotation of the rotor of each pair of crop layer divider blades are transversely spaced apart.

4,332,263

MANICURE EASEL

John V. Kitrell, 4639 Holdrege, Lincoln, Nebr. 68503

Filed May 12, 1980, Ser. No. 148,770
Int. Cl.³ A45D *29/00*
U.S. Cl. 132—73 **2 Claims**

1. A manicure easel for selectively supporting one hand of a person in a manicure position and for supporting the other hand of the person in a position to enable the said other hand to perform manicure operations on the said one hand, comprising,

a first support means adapted to be positioned on a horizontal supporting surface,

a finger support on said first support means for supporting the tip portion of the finger to be manicured,

and a hand rest secured to said first support means and extending laterally therefrom for supporting the said other hand,

said hand rest comprising interchangeable first and second hand rest members, said first hand rest member dwelling in a vertical plane below said second hand rest member to

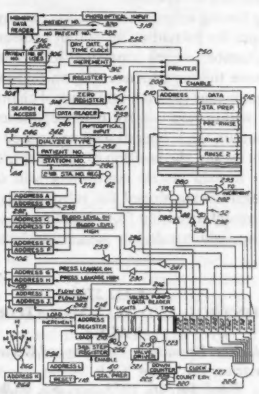
permit the said other hand to be selectively positioned below and above the finger in said finger support respectively.

4,332,264

AUTOMATED CLEANING SYSTEM FOR DIALYZERS

Norman Gortz, Irvine; Andrew S. Huson, Tustin, and Robert M. MacIntyre, Anaheim, all of Calif., assignors to United Healthcare Association, Newport Beach, Calif.

Filed Mar. 3, 1980, Ser. No. 126,522
Int. Cl.³ B08B *3/04, 9/00*
U.S. Cl. 134—57 R **12 Claims**



1. A system for cleaning a dialyzer having a blood side and a dialysate side separated by a membrane comprising:

means for storing a first predetermined sequence of cleaning procedures, said first storing means providing first control signals;

means for storing a second predetermined sequence of cleaning procedures, said second storing means providing second control signals;

means for regulating the flow of a plurality of blood cleaning reagents through the dialysate and blood sides of the dialyzer;

means responsive to said first control signals for automatically controlling said regulating means to provide said cleaning procedures in said first predetermined sequence;

means for monitoring the condition of said dialyzer during said first predetermined sequence of cleaning procedures; and

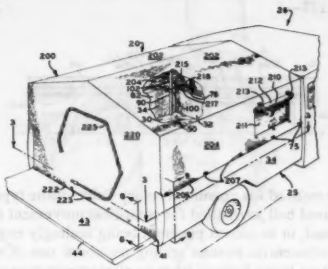
means responsive to said monitoring means for selectively controlling the sequencing of the cleaning procedures in said second predetermined sequence in response to the condition of said dialyzer to prohibit the use of defective dialyzers.

4,332,265

COLLAPSIBLE TENT FOR TRUCK BEDS

Robert L. Baker, 4815 E. Santa Ana, Fresno, Calif. 93726

Filed May 27, 1980, Ser. No. 153,158
Int. Cl.³ B60P *3/34*
U.S. Cl. 135—3 A **4 Claims**



1. A collapsible tent adapted to be erected on a truck bed or the like comprising:

A. an articulated frame including a plurality of rigid, elongated elements adapted to be assembled to define a chamber and disassembled for compact stowage;

B. stud and socket means releasably engageable to interconnect the elements in chamber defining assembly and releasable by outward movement relative to the chamber to free the elements from assembled relation; and

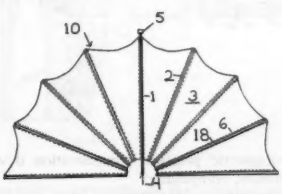
C. a cover of flexible sheet material fitted downwardly over the frame having a lower edge adapted for connection to such a bed to tension the cover downwardly against the frame releasably to hold the stud and socket means in engagement against outward movement relative to the chamber.

4,332,266

PORTABLE BLIND AND SHELTER

Tevis R. Wageley, R.F.D. No. 4, Box 428, Martinsburg, W. Va. 25401

Filed Aug. 22, 1980, Ser. No. 180,460
Int. Cl.³ E04F *10/02*
U.S. Cl. 135—5 R **20 Claims**



1. A structure for use as a blind or shelter to obscure or conceal the position of the user comprising a single supporting mast having a ground penetrating portion, a light weight, flexible, substantially planar semi-circular screen, said mast being secured thereto along a radius thereof and ribs or rod members secured to said screen portion along other radii thereof, said ground penetrating portion of said mast extending beyond a straight diametral edge of said screen, one end of each of said ribs or rod members terminating substantially adjacent to the end of the top of the ground penetrating portion and the others ends of said ribs or rod members terminating at the semi-circular edge portion at the circumference of the screen.

4,332,267

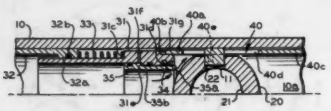
BALL VALVE ASSEMBLY

Robert W. Evans, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.

Division of Ser. No. 42,257, May 24, 1979. This application Apr. 18, 1980, Ser. No. 141,523

Int. Cl.[3] E03B *1/00*

U.S. Cl. 137—1 2 Claims



1. The method for opening a rotary valve of the type having an apertured ball journalled for rotational movement in a fluid passage and, in its closed position, being sealingly engaged by a pair of concentric annular sealing members, one of said sealing members being formed from an elastomeric material, comprising the steps of: (a) axially shifting the one annular sealing member relative to the ball to disengage from the ball while the ball is in its closed position and the other annular sealing member remains in fully sealed engagement with the ball; (b) then axially shifting the other of the annular sealing elements relative to the ball to disengage from the ball so that rotation of the ball is resisted solely by the fluid stream in the passage; and (c) rotating the ball to an open position wherein the ball aperture is aligned with the fluid passage.

4,332,268

ATMOSPHERIC PRESSURE COMPENSATION DEVICE

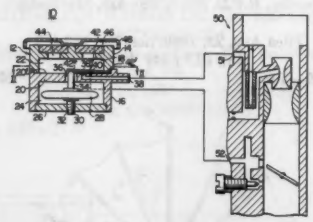
Junjiro Yoshimura, Okazaki; Akira Furukawa, Anjo, and Takehiro Ando, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 4, 1979, Ser. No. 72,296

Claims priority, application Japan, Jan. 16, 1979, 54/4416[U]; Mar. 8, 1979, 54/29805[U]

Int. Cl.[3] F16K *17/36*

U.S. Cl. 137—81.1 1 Claim



1. An atmospheric pressure compensation device for use with a carburetor, comprising:

a housing having an air inlet and at least one air outlet;

a filter element covering said air inlet;

means in said housing defining a planar surface in which at least one opening is formed, said opening leading to said air outlet, the portion of said surface around said opening providing a substantially flat valve seat;

a flat valve member formed of resilient sheet metal having an end portion fixed to said surface in spaced relation to said opening, said valve member having a free portion having a substantially flat valve surface urged by the resiliency of said sheet metal to be brought into sealing engagement with said valve seat; and

a bellow means having rod means extending through another opening in said surface and operatively engaged with said free portion of said valve member and being responsive to variation in the atmospheric pressure to vary the angular position of said free portion of said valve member relative to said valve seat, said valve seat being positioned between said fixed end portion of said valve member and the engagement therewith of said rod means.

4,332,269

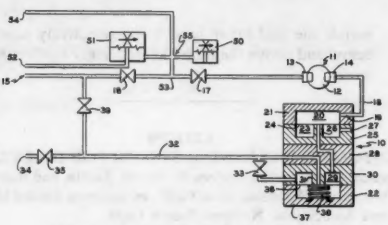
SLOPED NOZZLE PNEUMATIC DEVICE

Ronald L. Martin, Bristol, Wis., and Mario M. V. Orrico, Chicago, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 29, 1980, Ser. No. 191,615

Int. Cl.[3] G05D *16/00*

U.S. Cl. 137—84 11 Claims



1. A pneumatic device having a sloped nozzle for reducing positive feedback comprising:

a housing having an input for receiving an input pressure and an output for providing an output pressure;

control chamber means connected to said input and having a pressure therein dependent upon said input pressure;

diaphragm means defining said control chamber means; and,

a nozzle within said control chamber means, connected to said output, and operatively associated with said diaphragm means, the position of said diaphragm means with respect to said nozzle controlling said output pressure, said nozzle being sloped for substantially reducing positive feedback resulting from bleeding of said output pressure from said nozzle into said control chamber means.

4,332,270

FLOW CONTROL AND ACCUMULATOR CHARGING VALVE

Ludwig Budecker, Frankfurt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 26, 1979, Ser. No. 60,946

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1978, 2836816

Int. Cl.[3] G05D *15/00*

U.S. Cl. 137—101 27 Claims

1. A valve device comprising;

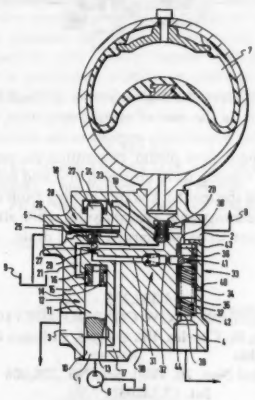
a pressure port connected to a pump;

a first user port in communication with a pressure accumulator and a first user component, said first user port connected to said pressure port through a first conduit having a first throttle and a first check valve disposed therein;

a second user port in communication with a second user component and connected with said pressure port through a by-pass valve including a by-pass piston having a first effective surface adjacent said pressure port subjected to pressure at said pressure port in the opening direction of said by-pass valve and a second effective surface spaced from said first effective surface subjected to pressure from said pressure port in the closing direction of said by-pass valve; said second effective surface being disposed in a control chamber, said control chamber connected to said pressure port through said first throttle and an accumulator-pressure-responsive pilot valve when the pressure of said accumulator is below a predetermined limit and to a

return line when the pressure of said accumulator reaches said predetermined limit;

a third user port in communication with a third user component requiring a large amount of pressure transmitting fluid and connected with said pressure port through a control valve, said control valve including an operating piston spring loaded in the closing direction of said control valve and having a third effective surface subjected to the pressure at said first user port in the opening direction of said control valve and a fourth effective surface subjected to the pressure at said third user port in the closing direction of said control valve, said third user port connected to said first user port through a second throttle, said operating piston is axially slidable in a cylindrical bore and subdivides said cylindrical bore into first and second chambers, said first chamber connected to said



first user port and said second chamber connected to said third user port, the end surface of said operating piston adjacent said first chamber is said third effective surface and the end surface of said operating piston adjacent said second chamber is said fourth effective surface, said operating piston is a hollow piston including an axial bore therethrough having a portion thereof dimensioned to provide said second throttle; the axial stroke of said operating piston is limited by spaced stops provided in said cylindrical bore; and

a second conduit connected to said pressure port opens radially into said cylindrical bore, said second conduit being open in one end position of said operating piston and being closed by the circumferential surface of said operating piston in the other end position of said operating piston.

4,332,271

THROTTLING DEVICE FOR PIPE CONDUITS

Eduard Rohr, Maegenwil, Switzerland, assignor to Eduard Rohr AG, Maegenwil, Switzerland

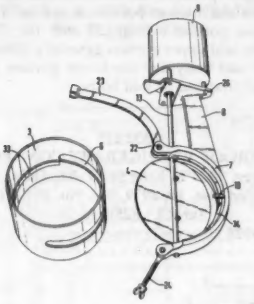
Filed Jul. 28, 1980, Ser. No. 172,989

Claims priority, application Switzerland, Aug. 8, 1979, 7266/79

Int. Cl.³ F16K *51/00*; F16L *55/10*

U.S. Cl. 137—315 **10 Claims**

1. A throttling apparatus for a conduit, comprising a pipe section connectable to said conduit, flap means in said pipe section, adjustment means operatively connected to said flap means, said pipe section comprising a substantially radially extending slot and for inserting said flap means through said slot, ring section means operatively arranged to cover said slot, bearing means in said ring section means for supporting said flap means in said ring section means, and securing means operatively securing said ring section means to said pipe section for removing said flap means through said slot when the flap means is in a pipe closed position to provide access to said pipe section, said securing means comprising bail means, pivot-



ing means connecting said bail means to one end of said ring section means, releasable means connecting said bail means to the other end of said ring section means, said bail means bridging said pipe section substantially opposite said slot.

4,332,272

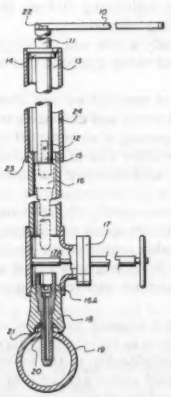
HOT TAP APPARATUS AND METHOD

David E. Wendell, 118 Warwick Dr., #58, Benicia, Calif. 94510

Filed Aug. 8, 1979, Ser. No. 64,772

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—318 **6 Claims**



1. A hot tap adapter comprising a body having circular cross section and generally cylindrical shape and having (1) a single internal conduit extending therethrough along the central axis thereof, (2) a first end adapted to be welded onto to a pipe or other member said first end having an externally bevelled surface thereabout the internal conduit, said internal conduit extending inwardly from the first end having an enlarged portion and frusto-conical section inwardly thereof, said frusto-conical section communicating with a tapered section, which has a first bevelled surface toward said frusto-conical section, said tapered section having internal threads thereabout for forming a metal to metal seal with an inserted device, said taper being toward said first bevelled surface, said tapered section connecting at its larger end to an upper chamber said body terminating concurrently with said upper chamber which has a larger cross section than said tapered section

and having a second bevelled surface adjoining said tapered section and (3) means located on the exterior of the second end of said body about the upper chamber for attachment to a valve wherein when said device, having an elongated configuration, an upper portion, an intermediate portion having threads thereon and a lower portion, is seated in said adapter, the intermediate portion is engaged with the threads of the tapered section, said upper portion generally extends from said second end of said body and the lower portion generally extends from said first end of said body.

4,332,273

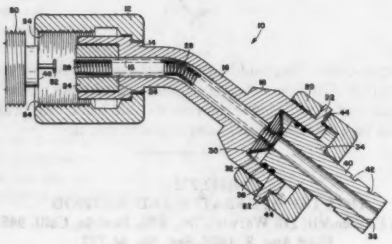
LEAKPROOF REFRIGERANT CONNECTOR

Harold L. Boyce, 7826 E. King St., Tulsa, Okla. 74115

Filed Dec. 10, 1979, Ser. No. 101,876

Int. Cl.³ F25B *45/00*

U.S. Cl. 137—322 **4 Claims**



1. A coupling for safely opening a normally closed Schrader-type valve which is connected to the refrigerant fluid of a compressor-type air conditioning system, the valve having a valve stem, the coupling comprising:

a first connector body a first end of which is attachable to the exterior of said valve, a second end including an opening therein;

a conduit retained at one end by said first connector body and sealed to said valve, and extending outwardly through said second end opening at an angle off-set from the axis of said opening, the other end of said conduit including an enlarged portion, said enlarged portion including a cylinder space which is in communication with said conduit;

a piston, having a bore axially therethrough in communication with said cylinder space and said conduit, said piston sealably reciprocable within said cylinder;

a second connector body interconnected with said enlarged portion of said conduit and retaining said piston in said cylinder;

an elongated resilient conduit like member extending from the end of said piston in said cylinder through said conduit into contiguous relationship to the valve stem; and

means to advance said piston against said resilient member, thereby forcing said member against said stem to open said valve.

4,332,274

DISCONNECTOR FOR DRINKING WATER DISTRIBUTION SYSTEM

Maurice Frisquet, Esbly, France, assignor to Anciens Etablissements M. Frisquet, France

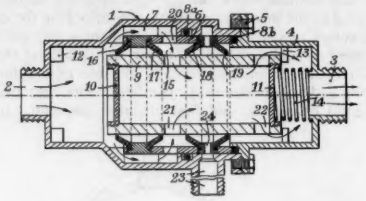
Filed Nov. 14, 1980, Ser. No. 206,987

Claims priority, application France, Nov. 12, 1979, 79 27779

Int. Cl.³ F16K *15/02*

U.S. Cl. 137—496 **5 Claims**

1. In a disconnector for a drinking water distribution system comprising a hollow cylindrical body with aligned upstream inlet and down stream outlet, a central chamber having a discharge outlet to the drain for the feedback water, and a hollow piston which the drinking water must pass through to go from the inlet to the outlet of the hollow body, said piston being axially slidable in the hollow body, between two end stops, in one direction under the action of the upstream pressure of the drinking water and in the other under that of an antagonistic spring which is added to the downstream pressure of feedback water, said hollow piston is closed at both its ends and it comprises in its cylindrical wall upstream apertures allowing the drinking water arriving from upstream to penetrate into the hollow piston and downstream apertures allowing this water to leave the hollow piston to reach the outlet of the disconnector, in the case of normal operation, in combination with circular lipped seals applied to the external cylindrical surface of the hollow piston, preventing the penetration of drinking water coming from upstream into said hollow piston, as well as that of the feedback water coming from downstream in the case of a downstream overpressure, while allowing leaks of feedback water to be discharged to the drain.



4,332,275

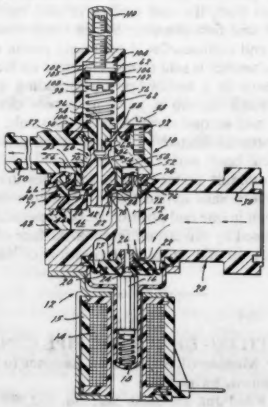
PRECISION FLOW CONTROL DEVICE

Wade R. Brown, St. Charles, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 20, 1980, Ser. No. 208,606

Int. Cl.³ G05D *7/01*

U.S. Cl. 137—504 **16 Claims**



1. A flow control device, said device comprising:

(a) housing means, said housing means including structure defining,

(i) a fluid inlet,

(ii) a fluid outlet,

(iii) a fluid chamber in fluid communication with said inlet and said outlet,

(iv) a pressure compensating chamber,

(v) a flow control orifice in the path of fluid flow from said fluid chamber to said fluid outlet;

(b) pressure responsive means movable in said fluid cham-

ber, said pressure responsive means including an elongated valve member having,

(i) an upstream side and downstream side including at least one flow restricting passageway therethrough for permitting fluid flow from the upstream side thereof to the downstream side thereof such that a pressure differential is developed thereacross which tends to move said valve member in a downstream direction;

(ii) a valve surface movable toward and away from said control orifice;

(iii) a surface portion in fluid communication with said pressure compensating chamber;

(c) means defining a passage for communicating fluid pressure from said upstream side of said valve member to said compensating chamber;

(d) means for biasing said valve member away from said control orifice; and

(e) said valve member movable in response to the net force of fluid pressure differentials thereacross and the force developed by said biasing means such that said valve surface is positioned relative to said control orifice for controlling flow therethrough to a predetermined rate.

4,332,276

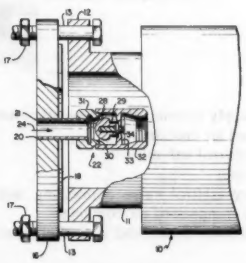
FUEL HOSE DRAINAGE APPARATUS

Donald H. Spring, One Fathom La., Wareham, Mass. 02571

Filed Nov. 6, 1980, Ser. No. 204,547

Int. Cl.³ F16L *55/10*

U.S. Cl. 137—526 **4 Claims**



1. An apparatus for use in combination with a fuel delivery hose of the type used in marine fuel transfer, comprising

a cover plate having means for securing said cover plate over a metal end fitting on one end of a marine fuel transfer hose to close the end fitting preventing flow of fuel therethrough and means defining an opening through said cover plate; and a valve coupled to said opening on the inner surface of said cover plate, said valve including

a housing having a fluid flow passage therethrough and having means defining a valve seat along said passage,

a valve member,

means carried by said housing for supporting said valve member for movement toward and away from said valve seat to respectively close and open said passage to fluid flow, and

spring means for urging said valve member toward said valve seat,

said valve member being movable away from said seat by air pressure outside of said hose which exceeds the pressure within said hose by a predeterminable amount; whereby said valve member normally remains closed to prevent the escape of fuel from said one end of said hose and said valve member is openable in response to differential pressure across said valve between the inside and outside of said hose to allow air to enter and to allow fuel contained in said hose to drain therefrom.

4,332,277

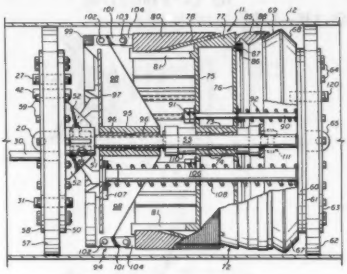
PIPELINE PIGGING PLUG

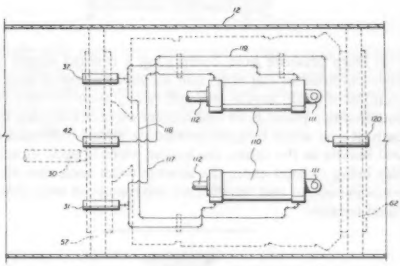
David E. Adkins; Arthur H. T. Chin; Ronnie E. Haws, and Robert H. Wittman, all of Houston, Tex., assignors to Hughes Undersea Coupling, Inc., Houston, Tex.

Filed Sep. 3, 1980, Ser. No. 183,828

Int. Cl.³ F16L *55/10*

U.S. Cl. 138—89 **6 Claims**





1. In a fluid-propelled pipeline pigging plug adapted for plugging a pipeline at a selected location therein, the combination comprising:

a body member having elastomeric means for sealingly and slidingly engaging the inside circumferential surface of said pipeline and supporting said body member in said pipeline, said body member being adapted for propulsion through said pipeline by the application of fluid pressure to said pipeline and against said body member;

a slip support assembly connected to said body member;

a plurality of axially movable slips, supported by said support assembly and adapted for wedging into locking engagement with the inside surface of said pipeline in response to axial movement thereof relative to said support assembly;

second seal means for making a fluid-tight seal between said plug and said pipeline while said slips are engaged with said pipeline;

said second seal means including an annular seal supported between said support assembly and said body number, said annular seal has a lip portion adapted for sealing engagement with said pipeline and including an elastomeric ring of different durometer rating embedded in the outside surface of said lip portion;

and means for moving said slips said into locking engagement with said pipeline;

whereby said plug may be inerted into said pipeline and pushed axially by fluid pressure along the inside thereof and set in fluid-tight sealing relationship therewith upon actuation thereof.

4,332,278

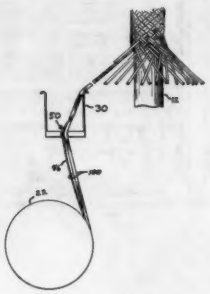
BRAIDED-WIRE SHEATHING HAVING BUNDLED STRANDS TWISTED TO EQUALIZE TENSION

James M. Lalikos, Springfield, and Harold K. Waite, East Longmeadow, both of Mass., assignors to Titeflex Corporation, Springfield, Mass.

Continuation of Ser. No. 861,264, Dec. 16, 1977, abandoned, which is a division of Ser. No. 676,940, Apr. 14, 1976, Pat. No. 4,092,897. This application Aug. 6, 1979, Ser. No. 63,798

Int. Cl.³ F16L *11/08*

U.S. Cl. 138—127 3 Claims



1. High pressure hose comprising a braided sheath woven over a hollow tubular core, said sheath comprising interwoven bundles of high tensile strength wire, each of said bundles comprising a plurality of continuous wires of differing lengths, each of said wires being a continuous strand from one end of said bundle to the other, the longer wires in each of said bundles being twisted about the shorter wires such that all of the wires in each of said bundles are woven about said core under equal tension.

4,332,279

CONNECTING ROD BETWEEN THE HEDDLE FRAME OF A WEAVING MACHINE AND THE HEDDLE FRAME ACTUATING DEVICE OF THE SHED-FORMING MACHINE WHICH CONTROLS SAME

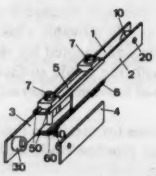
Rudolf Schwarz, Horgen-Zuerich, Switzerland, assignor to Staeubli Ltd., Horgen-Zuerich, Switzerland

Filed Jan. 3, 1980, Ser. No. 109,431

Claims priority, application Sweden, Jan. 9, 1979, 79162

Int. Cl.³ D03C *1/14, 11/00*

U.S. Cl. 139—82 9 Claims



1. In an elongated connecting device extending between a heddle frame of a weaving machine and a heddle frame actuating lever of a shed-forming machine, at least one of said heddle frame and actuating lever having an opening therein and said connecting device having a pair of spaced plates and having pivot means on said plates releasably engageable with said opening for effecting a pivotal connection of said connecting device to said one of said heddle frame and said actuating lever, the axis of said pivot means extending transversely of said connecting device and said pivot means including two pivot bolt parts which engage one another, each said bolt part being secured to a respective said plate, the improvement comprising two clamping rails arranged opposite one another and spaced from one another a distance substantially equal to the width of a said plate and clamping means cooperable with said clamping rails for urging said clamping rails toward one another, each said clamping rail having adjacent each longitudinal edge thereof a groove and said plates being arranged between said clamping rails, each said groove in each said clamping rail engaging a respective edge of a respective said plate.

4,332,280

AIR SUPPLY SYSTEM FOR A PNEUMATIC LOOM

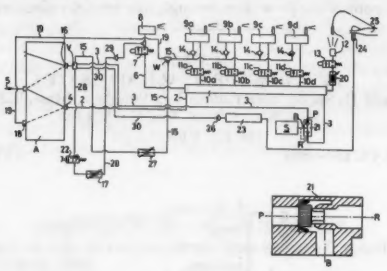
Petrus G. J. Manders, Eindhoven, Netherlands, assignor to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Nov. 28, 1980, Ser. No. 211,102

Claims priority, application Switzerland, Dec. 21, 1979, 11392/79

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 4 Claims



1. An air supply system for a pneumatic loom, comprising:

a compressed air container;

a primary control valve;

a pressure line;

said primary control valve connecting said pressure line with said compressed air container;

a primary blower nozzle and a number of auxiliary blower nozzles;

control valve means for operatively connecting said auxiliary blower nozzles with said compressed air container; and

compressed air storage means which, during standstill of the loom, is connected with the pressure line and during the starting phase of the loom is connected forwardly of the compressed air container.

4,332,281

METHOD AND APPARATUS FOR SPREADING A POLYURETHANE FOAMABLE COMPOSITION

Morimitsu Baba, Yame, Japan, assignor to Asahi Glass Company, Ltd., Yame and Baba Seisakusho Co., Ltd., Fukuoka, both of, Japan

PCT No. PCT/JP79/00054, § 371 Date Sep. 26, 1979, § 102(e) Date Sep. 26, 1979, PCT Pub. No. WO79/00734, PCT Pub. Date Oct. 4, 1979

PCT Filed Mar. 7, 1979, Ser. No. 185,911

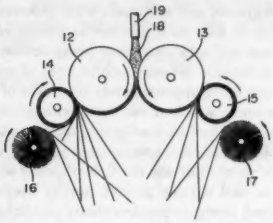
Claims priority, application Japan, Mar. 10, 1978, 53-26633; Sep. 9, 1978, 53-110223

Int. Cl.³ B05B *3/02;* B65B *3/04*

U.S. Cl. 141—1 3 Claims

1. In a method for spreading a foamable composition for a polyurethane foam on surfaces which are relatively moved, an improvement characterized by premixing the ingredients needed to form said foamable composition, feeding and spreading said foamable composition on a first moving surface, and

then, scattering said foamable composition at the time being further foamable in a form of fine particles from said first surface on a second surface which is relatively moved, and wherein the step of scattering said foamable composition on said first surface in a form of fine particles is carried out by



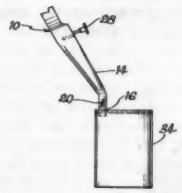
using a first roll having a fibrous layer which is rotated under contacting with said first surface, and wherein additional scattering is carried out by using a second rotating roll, located below said first roll having a fibrous layer, but out of contact with said first roll.

4,332,282

MEANS AND METHOD OF RECLAIMING CRANKCASE OIL

Roger W. Strange, 11510 Poblado, San Diego, Calif. 92127

Filed Sep. 12, 1980, Ser. No. 186,678
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—1 **6 Claims**



3. A method for reclaiming crankcase oil comprising the following steps:

(a) draining the used oil from the crankcase into a container;
(b) cutting a hole in a sufficient number of fresh oil cans to fill the crankcase;
(c) pouring fresh oil from said cans into said crankcase;
(d) pouring used oil from said container into said cans; and
(e) plugging the holes in said cans.

4,332,283

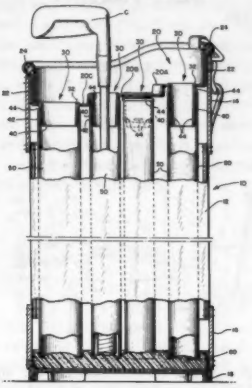
DEVICE FOR SUPPORTING AND PROTECTING GOLF CLUBS

Richard S. Rader, Chatsworth, Calif., assignor to Ajay Enterprises, Inc., Delavan, Wis.

Filed Aug. 18, 1980, Ser. No. 179,196
Int. Cl.³ A63B *55/00*
U.S. Cl. 150—1.5 R **15 Claims**

1. A golf club protective device for use with a golf bag and club-receiving tubes comprising;

a plate member having a selected external configuration for being positioned and retained with a golf bag across the bag opening;
a plurality of apertures within said plate member each dimensioned to receive the shaft of a golf club and spaced laterally on said plate member to separate clubs in adjacent apertures a selected distance;
a boss portion integrally formed with said plate member adjacent and substantially aligned with each aperture and extending downwardly from said plate member a selected distance from the associated aperture and having a downwardly converging external configuration adapted to engage with the inside of the top portion of an elongate club-receiving tube positioned within the golf bag below said plate member,



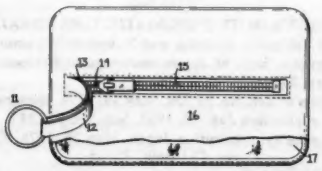
whereby said protective device will firmly retain said tubes in selected positions within said golf bag and allow individual clubs to be inserted into said tubes for protection without potentially damaging engagement between the top portion of said tubes and the golf club.

4,332,284

KEY CHAIN WALLET

Christopher N. Pallis, 3741 81st SE., Mercer Island, Wash. 98040

Filed Jul. 14, 1980, Ser. No. 167,925
Int. Cl.³ A45C *11/32*
U.S. Cl. 150—35 **2 Claims**



1. An accessory case designed to be carried in a pocket or purse comprising:

a first exterior wall made of a flexible material and including a closeable opening passing through the wall,
a second exterior wall made of a flexible material and including a closeable opening passing through the wall,
a third wall intermediate the two exterior walls, means securing the three walls together about the periphery thereof whereby a divided case capable of being opened from either side is formed,
a strip of material has been cut from the midsection of the first exterior wall with one end of this strip remaining intact and where the cut end is secured to the opposite uncut end of the first exterior wall forming a loop from which a key ring is attached.

4,332,285

TRACTOR POWER LIFT MECHANISMS

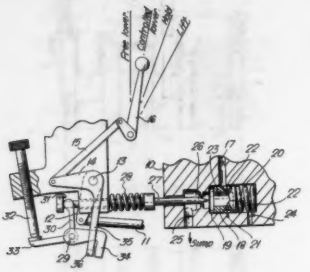
Harry Horsfall, Huddersfield, England, assignor to David Brown Tractors, Ltd., Huddersfield, England

Filed Jun. 9, 1980, Ser. No. 157,769

Claims priority, application United Kingdom, Jun. 12, 1979, 7920311

Int. Cl.³ F16K 31/44

U.S. Cl. 251—240 4 Claims



1. A hydraulic power lift mechanism, for an agricultural tractor or the like, having flow control means with associated adjustment means for variably throttling the flow to enable different implements to be lowered at appropriate rates and with means for overriding said adjustment means so as fully to open said flow control means and thereby enable an implement to be lowered at the maximum possible rate when desired

said flow control means including an axially slideable needle valve;

said adjustment means comprising a spring urging the needle valve in the closing direction, a lever fixed on a spindle and capable of moving said valve in the opening direction against the action of said spring, and means for enabling the angular position of said lever about the axis of said spindle to be varied;

said lever being a bell-crank lever one arm of which contacts a shoulder on the needle valve, and the means for enabling the position of said lever to be varied comprising a manually rotatable adjusting screw which contacts the other arm of said lever.

4,332,286

HEAVY DUTY PNEUMATIC TIRE TREAD

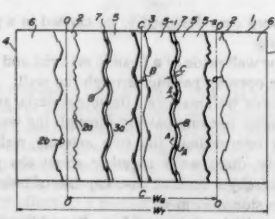
Hiroyoshi Takigawa, Kodaira, and Nobuhiro Miyamura, Higashimurayama, both of Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan

Continuation of Ser. No. 39,730, May 19, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,817

Claims priority, application Japan, May 26, 1978, 53-62943

Int. Cl.³ B60C 11/06

U.S. Cl. 152—209 R 5 Claims



1. In a heavy duty pneumatic radial tire having high drainage including a tread in a crown of a tire body reinforced by a toroidal carcass extending between a pair of annular bead cores, the improvement comprising; said tread being formed with a pair of main wide grooves extending circumferentially on both sides of a central circumferential line; a wide subgroove extending along said central circumferential line and in parallel with said main wide grooves to form first ribs bounded by said wide subgroove and said main wide grooves and second ribs mounted by said main grooves and tread edges; said main wide grooves and said subgroove being devoid of transverse grooves; a distance between center lines of said pair of main wide grooves being approximately six-tenths of the tread width of the tire and a width of said main wide grooves being at least equal to a width of said wide subgroove; said first ribs each being formed with a single narrow groove extending circumferentially so as to divide the first rib into two substantially equal parts, said narrow groove having a substantially constant width and being circumferentially continuously zigzagging along a center line of said first rib, said narrow groove including means to bring both opposite sidewalls of the narrow groove into contact with each other intermittently in a circumferential direction in the zone load when the tire is loaded; and a width of said narrow groove being within 0.5–2.0% of the tread width of the tire.

4,332,287

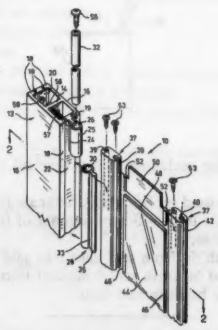
ROLLING SAFETY DOORS

Rudolf Stolpe, Chomedy Laval, Canada, assignor to Dynaflair Corporation Canada, Inc., Canada

Filed May 13, 1980, Ser. No. 149,528

Int. Cl.³ E06B 9/08

U.S. Cl. 160—133 7 Claims



1. A rolling door construction comprising:

a plurality of spaced-apart elongated members, each member having opposed longitudinal slots, each slot in section having an enlarged internal portion and a neck portion narrower than said internal portion,

a plurality of light-transmitting panels of uniform thickness, each panel having opposing side edges and opposing end edges, the two opposing side edges of each panel being received in the slots in two adjacent elongated members,

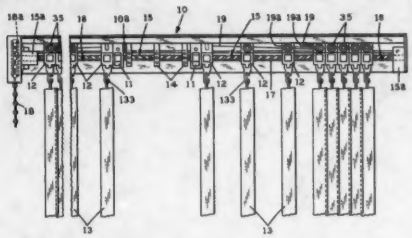
a plurality of spacer plate member, each spacer plate member having opposed edge beads received in the internal portions of two slots, the beads being too large to be withdrawn through the neck portions of the slots, the spacer plate members being arranged so that two of them are adjacent the end edges of each panel,

and means for restraining movement of the panels and the plate members longitudinally of the elongated members.

4,332,288
PULL CARRIER FOR VERTICALLY LOUVERED VENETIAN BLIND

Kurt H. Frentzel, Zevenhoven, and Herman Oskam, Bergambacht, both of Netherlands, assignors to Hunter Douglas Internation, N.V., Curacao, Netherlands

Filed Apr. 3, 1980, Ser. No. 136,951
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913887
Int. Cl.³ E06B 9/26
U.S. Cl. 160—176 R 7 Claims

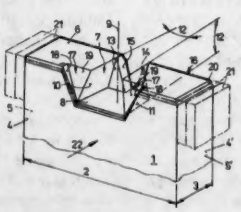


1. In a louvered venetian blind having a headrail, a plurality of louver carriers mounted in said headrail for movement therealong, a plurality of vertically disposed louvers each supported from one of said louver carriers, a pull carrier for moving the louver carriers along said headrail, drive means for rotating said louvers about their vertical axes and for moving said pull carrier and said louver carriers along said headrail, the improvement comprising said louvers being rotatable about their axes in either direction, stop means for stopping said rotation of said louvers in each direction, a free wheel mechanism carried by said pull carrier driven by said drive means, means for moving said pull carrier along said headrail after said stop means has stopped the rotation of said louvers about their vertical axes in one of said directions, and means for disconnecting said free wheel mechanism from said drive means to prevent movement of said pull carrier along said headrail during all times when said louvers are being rotated about their vertical axes.

4,332,289
STARTER BAR HEAD TO BE USED FOR CASTING METAL IN A CONTINUOUS CASTING MOULD OF A CONTINUOUS CASTING PLANT

Gerhard Reithner; Peter Wagner, both of Linz, and Franz Kagerhuber, Hörsching, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 29, 1980, Ser. No. 182,765
Claims priority, application Austria, Oct. 8, 1979, 6546/79
Int. Cl.³ B22D 11/08
U.S. Cl. 164—446 3 Claims

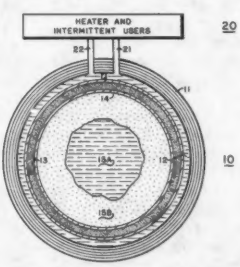


1. In a starter bar head to be used for casting metal in a continuous casting mould of a continuous casting plant, in particular a continuous casting plant for steel slabs, and of the type including side faces directed to and sealed relative to the walls of the continuous casting mould, a front face closing the continuous casting mould, at least one anchoring recess for the hot strand departing from one of said side faces, at least partly penetrating said front face of said starter bar head and to be filled up by the metal to be cast, which anchoring recess possesses a bottom face and is designed so as to widen from said front face to said bottom face and further has at least two side walls arranged symmetrically to the longitudinal axis of said starter bar head and directed to said bottom face, a further recess provided in said starter bar head, said two side walls of said at least one anchoring recess passing over into said further recess, and which further recess includes a surface bordering at the mould side walls to be sealed off and directed upwardly to said front face of said starter bar head, the improvement which is characterized in that said further recess passes over into the side face of said starter bar head from which said anchoring recess departs with a surface enclosing an approximately right angle with the respective side face.

4,332,290
APPARATUS FOR RAPID HEAT TRANSFER AND EFFICIENT HEAT STORAGE

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 756,392, Jan. 3, 1977, Pat. No. 4,164,253, which is a continuation-in-part of Ser. No. 30,997, Apr. 18, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,480
Int. Cl.³ F24D 11/00; F28D 17/00
U.S. Cl. 165—10 2 Claims



1. Apparatus for storing and releasing heat, comprising a plurality greater than two of nested layers of latent heat storing material, each said layer separated at most by a thermal conductor, and each said layer having a higher phase transition temperature than an adjacent outer layer whereby heat is transferred to charge the outer layer from the inner layer to reduce thermal impedence of said apparatus.

2. A system for storing and using heat, comprising:

an intermittent user having a maximum operating temperature and having a plurality of operating periods separated by idle periods,

a first latent heat storing material having a phase transition temperature to a crystalline phase above the maximum operating temperature of the user and having short thermal paths to a heat transfer fluid which heat transfer fluid is in a heat exchange relationship with the user during the operating periods,

a second latent heat storing material having a substantially larger thermal capacity, a substantially larger thermal energy density, and a higher phase transition temperature than the first latent heat storing material, and

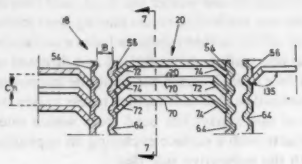
means for exchanging heat between the first and the second latent heat storing materials whereby the first latent heat storing material is recharged by discharging the second latent heat storing material.

4,332,291

HEAT EXCHANGER WITH SLOTTED FIN STRIPS

Desmond Mulock-Bentley, Johannesburg, South Africa, assignor to D. Mulock-Bentley and Associates (Proprietary) Limited, Johannesburg, South Africa

Filed Dec. 21, 1979, Ser. No. 106,020
Int. Cl.³ F28D *1/04*
U.S. Cl. 165—76 **8 Claims**



7. A heat exchanger comprising a series of conduits for a gas or a liquid that are spaced apart and define a series of substantially parallel planes, and fin elements in the form of transversely slotted strips arranged in a stacked formation in the spaces between the conduits and adapted to be traversed by a gas, each fin element extending between one conduit and an adjacent conduit and having at one end a relatively wide transverse edge zone and at the other end a relatively narrow transverse edge zone, alternate fins being arranged opposite ways round in the stacked formation so that the slots in each fin are staggered relatively to those in its immediate neighbours, but aligned with the slots in similarly positioned fins both in the direction of the intended gas flow past the fin elements and also in a direction extending transversely to the direction of intended gas flow past the fin elements in a plane parallel to the planes defined by the conduits, said heat exchanger further having a length L of the cross-section of a fin element between the slots measured in the intended direction of gas flow past the fins, a distance Cn in millimeters between similarly positioned fin elements measured transversely to the direction of intended gas flow past the fin elements in a plane parallel to the planes defined by the conduits, and a width Cp in millimeters of the slots in the fins measured in the direction of the intended gas flow past the fin elements, where:

L is in the range 2 to 10 mm;

Cn/L is in the range 0.25 to 2; and

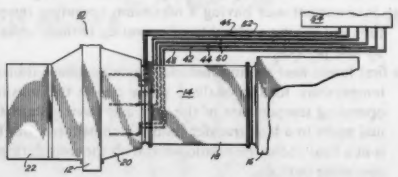
Cp/L is in the range 0.75 to 4.

4,332,292

COIL CLEANING DEVICE AND SYSTEM

Thayne K. Garberick, 3506 S. Michigan St., South Bend, Ind. 46614

Filed May 9, 1980, Ser. No. 148,196
Int. Cl.³ F28G *1/16*
U.S. Cl. 165—95 **8 Claims**



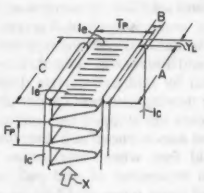
1. In combination with a heat recovery apparatus having a heat exchanger coil for recovering heat from exhaust gases discharged through a stack or flue, a system for cleaning an area of the coil, comprising an elongated flexible member forming a passageway for directing a pressurized cleaning medium against the area of the coil on the upstream side of the coil, one end of said flexible member being secured in a relatively stationary manner and the other end of said member being unsupported, a nozzle disposed in said unsupported end of said member providing a restricted exit from said member, a supply source for providing the pressurized cleaning medium to said member under sufficient pressure to dislodge dirt, soot, and other contaminants from the coil and to cause the contaminants to pass through the coil, and supply lines connecting said supply source to the stationary end of said member.

4,332,293

CORRUGATED FIN TYPE HEAT EXCHANGER

Michio Hiramatsu, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed May 29, 1980, Ser. No. 154,458
Claims priority, application Japan, Apr. 30, 1980, 55-58385
Int. Cl.³ F28F *1/22*
U.S. Cl. 165—153 **23 Claims**



1. A corrugated fin type heat exchanger comprising a plurality of equally spaced parallel tubes arranged in a single row and defining therein a first series of passages for a first fluid and a corrugated strip defining fins disposed between and thermally connected to each pair of adjacent tubes to cooperate therewith to define a second series of passages for a second fluid, each of said tubes being of the same substantially rectangular cross-section and arranged such that the longitudinal axis of said rectangular cross-section is substantially parallel to the direction of the flow of the second fluid passing through said second series of passages, means defining an inlet chamber for the first fluid operative to distribute the first fluid to said tubes, and means defining an outlet chamber operative to gather flows of the first fluid from said tubes, characterized by:

the dimension of each of said fins as measured in the direction of the flow of the second fluid is within the range of from 12 mm to 23 mm;

the pitch of the corrugations of said corrugated strip defining said fins is within the range of from 1.5 mm to 3.3 mm;

said fins are louvered to provide vanes and openings, said vanes of each fin being arranged in at least two successive groups in the direction of the flow of the second fluid with the vanes in each group being inclined with respect to the general plane of the corresponding fin at an angle opposite to that of the vanes of adjacent groups;

the width of each vane is within the range of from 0.7 mm to 1.2 mm; and

each vane is inclined at an angle of from 18° to 32°.

4,332,294

GAS COOLER WITH MULTIPLY DEFORMED LEAD TUBES

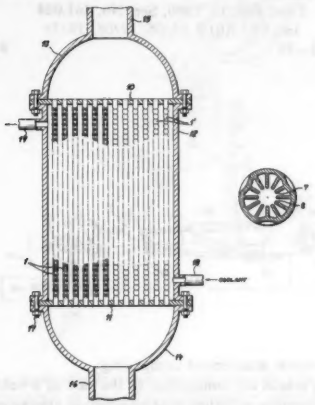
Klaus Drefahl, Hanau, and Helmut Gilles, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 4, 1979, Ser. No. 26,893

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1978, 2814828

Int. Cl.³ F28F *1/06*

U.S. Cl. 165—157 2 Claims



1. An apparatus for cooling a gas containing sulphur dioxide, comprising:

a heat-exchanger housing adapted to receive a liquid coolant under a pressure greater than that of said gas and provided with a pair of parallel spaced-apart tube sheets;

a bundle of mutually parallel but transversely separated extruded lead tubes of substantially constant wall thickness perpendicularly spanning said tube sheets and defining between them a space for said coolant, each of said tubes being internally formed with a plurality of radially inwardly extending longitudinally fins and being deformed inwardly at axially spaced-apart locations, with formation of sets of peripherally spaced-apart indentations of spherically segmental curvature, to prevent collapse of the tubes under a pressure gradient developed thereacross between said coolant and said gas, adjacent sets of indentations being relatively angularly offset;

first conduit means connected to said housing for passing said coolant through said space; and

second conduit means communicating with said tubes for passing said gas therethrough.

4,332,295

COMPOSITE CERAMIC HEAT EXCHANGE TUBE

Paul G. LaHaye; John W. Bjerklie, and Robert A. Penty, all of Cape Elizabeth, Me., assignors to Hague International, South Portland, Me.

Filed May 19, 1980, Ser. No. 150,888

Int. Cl.³ F28F *21/04*

U.S. Cl. 165—178 15 Claims

1. A composite heat exchange tube comprising;

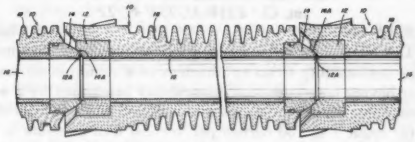
a main tube body of a high temperature resistant material,

and an inner tube means disposed within the main tube body and having end means disposed within the main tube body and having end means forming a sealing joint at opposite ends of the tube,

said end means capable of being highly polished to form a high pressure sealing surface,

said main tube body being constructed of a somewhat porous thermal shock resistant ceramic,

and said inner tube means being constructed of a more dense material than the main tube body and less porous than the main tube body,



said inner tube means is constructed of a ceramic material having a density greater than that of the main tube body and substantially impervious to fluids up to at least 500 p.s.i. within the tube.

4,332,296

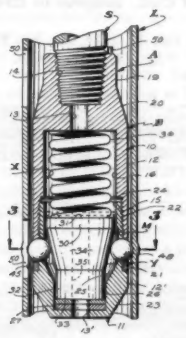
WELL CLEANING TOOL

Newell E. Wayt, 2272 Dominguez St., Torrance, Calif. 90501

Filed Aug. 1, 1980, Ser. No. 174,676

Int. Cl.³ B08B *9/02;* E21B *37/02*

U.S. Cl. 166—171 8 Claims



1. A liner cleaning tool comprising an elongate vertically extending cylindrical body, coupling means at the upper end of the body to connect with a fluid conducting run-in pipe string, a central longitudinal flow passage in the body communicating with the pipe string and opening downwardly, an enlarged, central, axially extending cylindrical chamber in the body between the upper and lower end portions of the flow passage, a plurality of circumferentially spaced ball receiving openings in the body communicating between the exterior of the body and the chamber, an elongate axially shiftable mandrel with a downward and radially inwardly convergent conical surface slidably engaged in the chamber and having a central longitudinal fluid conducting opening, a helical compression spring in the chamber above the mandrel and engaging and normally yieldingly urging the mandrel downwardly and a ball rotatably and axially shiftably arranged in each opening and having an outer liner engaging portion projecting radially outwardly from the body and an inner portion projecting radially inwardly into the chamber and engaging the mandrel.

4,332,297

SELECTIVELY CONTROLLING FLUID FLOW THROUGH THE HIGHER PERMEABILITY ZONES OF SUBTERRANEAN RESERVOIRS

Burton B. Sandiford, Placentia, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Aug. 18, 1980, Ser. No. 178,911
Int. Cl.³ E21B *33/138, 43/22*
U.S. Cl. 166—270 **29 Claims**

1. A method for reducing the permeability of the medium to high permeability strata or channels of a subterranean reservoir having heterogeneous permeability penetrated by a well comprising injecting through said well and into said reservoir:

(a) about 1 to 100 barrels per vertical foot of strata to be treated of a first composition consisting essentially of an aqueous solution or dispersion of a water-soluble relatively high molecular weight polymer selected from the group consisting of acrylic acid-acrylamide copolymers, terpolymers of acrylamides and substituted acrylamides, polyacrylamides, partially hydrolyzed polyacrylamides, polyalkyleneoxides and heteropolysaccharides obtained by the fermentation of starch-derived sugar, and

(b) about 1 to 100 barrels per vertical foot of strata to be treated of a second composition consisting essentially of an aqueous solution or dispersion of an alkali metal silicate,

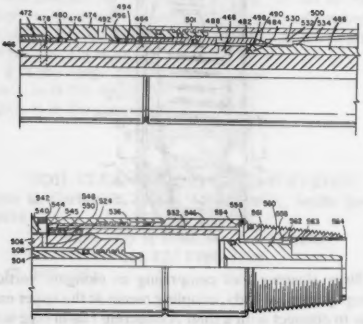
such aqueous solutions or dispersions being injected in a manner such that they are mixed in the reservoir.

4,332,298

VALVE ASSEMBLY FOR AN INFLATABLE PACKER SYSTEM

Felix Kuus, Huntington Beach, and Gerald C. Eckmann, La Puente, both of Calif., assignors to BJ-Hughes Inc., Long Beach, Calif.

Filed Feb. 11, 1980, Ser. No. 120,180
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—319 **11 Claims**



1. A valve assembly, intended for use in a well testing tool to be used in testing a zone of interest in a well having an annulus, for controlling the flow of inflation fluid to inflatable elements and the deflation thereof and adapted to be responsive to flow of inflation fluid and weight set-down and lifting on the testing tool comprising:

an outer valve member adapted to be fixed against rotation and up-down movement;

an inner valve member adapted for up-down movement with respect to said outer valve member; and

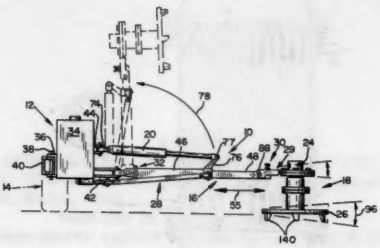
shifting sleeve means in said valve assembly between said inner and outer valve members adapted to be shifted longitudinally downwardly with respect to said outer valve member upon initial flow of inflation fluid in said valve assembly to establish an inflation fluid passageway through said valve assembly.

4,332,299

CULTIVATOR DEVICE FOR A VEHICLE

Alvin L. Parks, and W. D. McAlexander, both of Milton-Freewater, Oreg., assignors to Eldon K. Chinn, Milton-Freewater, Oreg.

Filed Jun. 19, 1980, Ser. No. 161,064
Int. Cl.³ A01B *33/06, 39/08, 39/16*
U.S. Cl. 172—98 **8 Claims**



1. A cultivator attachment comprising:

mounting means for connection to the side of a vehicle;

a boom assembly including first and second elongated boom sections with the second boom section telescopingly connected to said first boom section for extension and retraction;

boom connector means for pivotally connecting said first boom section to said mounting means such that the outer end of said boom assembly is movable upwardly and downwardly and projects outwardly from the side of a vehicle in a direction generally normal to the longitudinal axis of the vehicle;

cultivator head means mounted to the free end of said second boom section, said cultivator head means including a cultivator member mounted for rotation about the axis of the cultivator head;

first hydraulic cylinder means for moving the outer end of the boom assembly upwardly and downwardly;

second hydraulic cylinder means for extending and retracting said second boom section;

hydraulic motor means mounted to said cultivator head means for rotating said cultivator member to cultivate soil;

side tilt means for tilting the axis of the cultivator head in a plane containing such axis and the longitudinal axis of the boom to move the cultivator member away from or toward the vehicle to control the discharge of material from the cultivator head;

fore-and-aft tilt means for moving the cultivator head orbitally about the longitudinal axis of the boom to move the cultivator member forwardly or rearwardly;

said side tilt means and said fore-and-aft tilt means at least partially controlling the discharge of material from the cultivator head during cultivation;

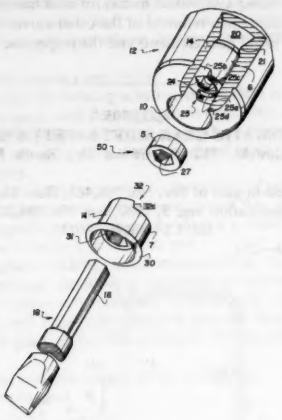
said boom connector means pivoting said first boom section to said mounting means for motion forwardly and rearwardly in a plane normal to the plane of upward and downward movement of the boom section, and said attachment including shock absorbing link means extending from said boom assembly to said mounting means for absorbing energy resulting from impact between said boom assembly or cultivator head and a solid object.

4,332,300

PNEUMATIC HAMMER NOZZLE SEAL

Henry A. Scarton, Troy, N.Y., and Warren C. Kennedy, Pittsburgh, Pa., assignors to Rensselear Polytechnic Institute, Troy, N.Y.

Filed Jun. 14, 1979, Ser. No. 48,392
Int. Cl.³ B25D *17/08*; B23B *31/20*
U.S. Cl. 173—104 **14 Claims**



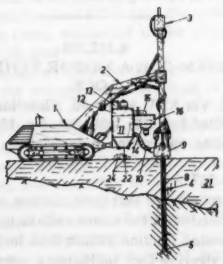
6. In a pneumatic hammer, having a nozzle hole with a tool shank movable therein, the improvement comprising, a bushing/retainer member having a bore therethrough for movably receiving the tool shank, which bushing/retaining member being fixedly mounted within the nozzle hole, said bushing/retainer member having a recess therein, and a seal member disposed in the nozzle hole in said bushing/retainer member recess, said seal member having a bore therethrough for receiving and closely fitting around the tool shank, said recess being of a size at least slightly larger than said seal member, whereby pressurized pneumatic fluid produced by the pneumatic hammer is substantially restricted from leaking out through the nozzle hole.

4,332,301

METHOD AND A MACHINE OF OBTAINING SAMPLES FROM THE GROUND TO DETERMINE ITS COMPOSITION

Per-Olof Jonell, Engelbrektsgatan 24, S-411 37 Göteborg, Sweden

Filed Apr. 21, 1980, Ser. No. 142,409
Claims priority, application Sweden, Apr. 27, 1979, 7903737
Int. Cl.³ E21B *44/00*
U.S. Cl. 175—50 **4 Claims**



1. An improved method of obtaining samples from the ground to determine the presence therein of certain substances, during a drilling operation comprising driving a drill bit by means of a drilling machine into the section of the ground to be prospected, and forcing cooling air through the drill bit down into the drill hole during the drilling operation, the improvement comprising the steps of

collecting the air and entrained duct and drill cuttings escaping from the drill hole

passing through a filter web at least a portion of the collected air and entrained dust and drill cuttings during the drilling operation, to remove at least a portion of the entrained particles from the collected air,

advancing said filter web continuously at a rate which is proportional to the drilling rate so that the removed particles will be segregated into areas relative to the depth from which they are taken, and

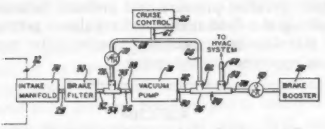
analysing dust particles collected on said filter web.

4,332,302

VEHICLE VACUUM SUPPLY SYSTEM

Thomas J. Kosmanski, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 28, 1980, Ser. No. 172,707
Int. Cl.³ B60T *13/48*
U.S. Cl. 180—54 R **6 Claims**



1. A vacuum supply system for a vehicle having a plurality of vacuum powered accessories including a primary accessory, said system comprising

an engine having an air intake system in which vacuum is developed that may be inadequate for operating such vacuum powered accessories under at least some engine operating conditions,

a primary conduit communicating the primary accessory with the engine intake to provide some operating vacuum,

a vacuum pump connected in the primary conduit between the primary accessory and engine intake to supplement the operating vacuum provided,

at least one secondary conduit connecting an additional accessory to the primary conduit at a junction, and

flow restriction means in the secondary conduit at the junction and operative to limit air flow through the secondary conduit to a volume sufficiently less than the capacity of the vacuum supply system to assure the provision of vacuum in the primary conduit for operating the primary accessory even in the event the secondary conduit is opened to atmosphere.

4,332,303

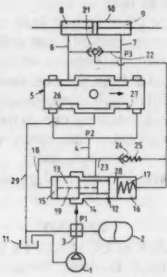
AUXILIARY POWER STEERING

Winfried de Maight, Mutlangen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 4, 1980, Ser. No. 174,932
Int. Cl.³ B62D *5/08*
U.S. Cl. 180—132 **9 Claims**

1. In an auxiliary power steering system for motor vehicles having a pump **(1)**, a pressure storage reservoir **(2)** charged with fluid by the pump, a manually operable steering control valve **(5)** that is closed in neutral position thereof, at least one piston servomotor **(10)** provided with two pressure spaces **(8, 9)** to which fluid is conducted under an operating pressure from the control valve, and a return tank **(11)** connected to one of the pressure spaces by the control valve when displaced

from said neutral position, the improvement residing in pressure reducing valve means (**12, 30**) operatively connected between the pressure storage reservoir and the steering control valve for supplying fluid under a regulated pressure to the steering control valve, said pressure reducing valve means having opposed sides, a spring (**17**) acting on one of said sides



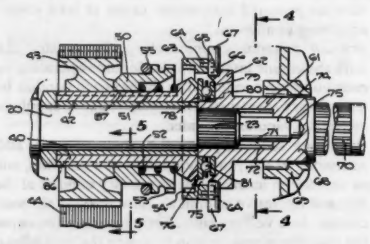
(**28**) to exert a bias thereon, feedback means having at least one connecting line (**20**) extending from the pressure spaces of the servomotor for augmenting the bias of the spring with fluid under said operating pressure, and pressure balancing means for supplying the fluid under said regulated pressure to the other of said sides of the pressure reducing valve means to act thereon in opposition to the spring.

4,332,304

TRANSFER CASE CONVERSION KIT

Charles A. Barnow, 11599 Newcastle Ave., Granada Hills, Calif. 91344

Filed Dec. 7, 1979, Ser. No. 101,156
Int. Cl.³ B60K *17/34, 23/08*
U.S. Cl. 180—233 **13 Claims**



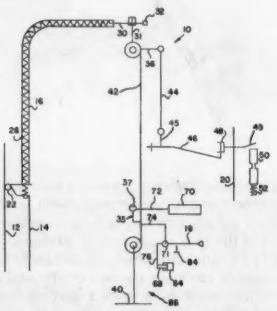
1. A transfer conversion mechanism for use in a transfer case through which engine power of a vehicle is transferred to respectively a drive attachment for a forward pair of wheels and a drive attachment for a rear pair of wheels, and wherein there is a differential carrier assembly comprising first and second carrier members in separable engagement with each other providing a chamber therebetween and a drive shaft therefor, the differential carrier assembly including a slider member having an axially shiftable and non-rotatable mounting relative to one of said drive attachments, non-rotatable engagement means adapted to releasably interconnect the slider member and said first carrier member, said slider member having a path of movement between positions of interconnection and release of said slider member with said first carrier member, a plurality of bevel gear elements held in operating position in said chamber during engagement of said first and second carrier members with each other and in driven relationship with said drive shaft, first and second output shaft members located one on each side of said plurality of bevel gear elements, each output shaft member having a single bevel gear element in engagement with said plurality of bevel gear elements, each of said first and second output shaft members being in operative relationship with one of said drive attachments, said conversion mechanism comprising a conversion shaft component for replacement of one of said output shaft members said conversion shaft component having means providing a driven engagement with said drive shaft, a direct drive connection means for connection to the respective drive attachment and an assembly bracket including attachment means for attachment to said first carrier member upon removal of the other carrier member the plurality of bevel gear elements and the respective output shaft member.

4,332,305

AUTOMATIC GEAR SHIFT SAFETY SYSTEM

Mike Kocolowski, 712 Thornwood Dr., South Holland, Ill. 60473

Continuation-in-part of Ser. No. 968,463, Dec. 11, 1978. This application Sep. 5, 1980, Ser. No. 184,274
Int. Cl.³ B60R *24/02*
U.S. Cl. 180—271 **10 Claims**



1. An apparatus for use in a motor powered vehicle equipped with (1) a transmission having a plurality of settings including a park setting in which said vehicle is positively restrained from moving; (2) at least one door to permit entrance to and egress from said vehicle by the operator of said vehicle; and (3) a gear shift handle in communication with said transmission, said handle having a plurality of positions corresponding to said plurality of transmission settings, said handle being moveable by said operator to select a transmission setting from among the plurality of such settings as desired, said apparatus comprising; connecting spring rod means associated with said door, said transmission and said handle and being capable of acting to cause said transmission to move into said park setting and said handle to move into said corresponding park position in response to the opening of said door.

4,332,306

SAFETY SYSTEM FOR A MOTOR VEHICLE STEERING LOCK

Mario Turatti, Via XXV Aprile 46, Nichelino, Turin, Italy

Filed Feb. 28, 1980, Ser. No. 125,316
Claims priority, application Italy, Mar. 5, 1979, 67468 A/79
Int. Cl.³ B60R *25/02*
U.S. Cl. 180—287 **10 Claims**

1. In a motor vehicle anti-theft steering lock device of the type incorporated with the motor vehicle ignition switch having a key operated ignition switch lock including a rotatable cylinder, said steering lock including a steering lock bolt displaceable between an extended position in which it engages the steering column of the vehicle and a retracted position in which it is spaced from the steering column,

resilient biasing means urging said steering lock bolt towards said extended position,

a rotatable cam rigidly connected to said rotatable cylinder of said ignition switch lock holding said steering lock bolt in said retracted position against the action of said resilient biasing means when said key is in position in said ignition switch lock,

safety means operable to allow displacement of said steering lock bolt from said retracted position to said extended position thereof only upon withdrawal of said key from said ignition switch lock when said rotatable cylinder thereof is in a position where the ignition switch is turned off,

further safety means comprising:

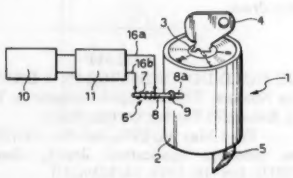
detector means for sensing whether the vehicle is in motion or is stationary, said detector means operating to provide a first output electrical signal when the vehicle is in motion and a second output electrical signal when the vehicle is stationary,

an electronic circuit connected to the output of said detector means and operating in response to said first and second output signals to provide at its output a control voltage when the vehicle is in motion, and

electromagnetic locking means connected to the output of said electronic circuit and operating in response to said control voltage to prevent the displacement of said steering lock bolt from said retracted position thereof to said extended position thereof whenever the vehicle is in motion,

wherein the said electronic circuit comprises:

an input terminal,



a capacitor connected between said input terminal of said circuit and ground,

a voltage source,

an electrolytic capacitor connected between said voltage source and ground,

a Zener diode connected by one terminal to said voltage source and by the other terminal to ground,

a first NOR gate having two inputs, which are both connected to said input terminal of said circuit,

a second NOR gate having two inputs one of which is connected through an RC unit, constituted by a capacitor and a grounded resistor, to the output of said first NOR gate,

a third NOR gate having two inputs which are connected together and to a capacitor which is connected to the output of said second NOR gate, the output of said third NOR gate being connected to the other input of said second NOR gate,

a resistor connected between the input of said third NOR gate and the non-grounded terminal of said Zener diode,

a fourth NOR gate having two inputs one of which is connected, through a unit constituted by a diode in parallel with a resistor, to the output of said second NOR gate, and the other of which is connected to a junction point between two resistors one of which is grounded and the other of which is connected to control terminal of the circuit,

an electrolytic capacitor connected between said one input of said fourth NOR gate and the non-grounded terminal of said Zener diode, and

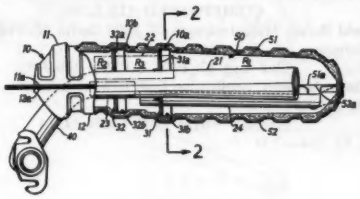
a transistor the base of which is connected through a resistor to the output of said fourth NOR gate, the emittor of which is connected to ground, and the collector of which is connected to said voltage source through a diode, said collector constituting the output of said circuit.

4,332,307

EXHAUST MUFFLER

Hiroshi Ito, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 29, 1980, Ser. No. 201,774
Claims priority, application Japan, Oct. 31, 1979, 54-140586
Int. Cl.³ F01N *1/24, 1/08, 7/00*
U.S. Cl. 181—256 **6 Claims**



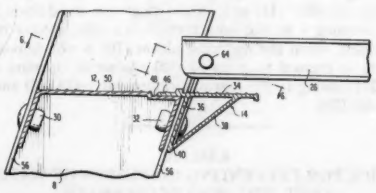
1. An exhaust muffler comprising: a tubular outer shell comprised of two pieces, each having an inner wall, said pieces being joined together at a pair of longitudinal seams, and together forming an inside space; a tubular sound absorbing member comprised of two elements having inner and outer surfaces, said outer surfaces being shaped to conform to, and abut against said inner walls of said outer shell, said inner surfaces of said sound absorbing member forming a cavity; a partition dividing said cavity into a plurality of compartments; a diffuser pipe interconnecting said compartments; exhaust inlet means to one of said compartments, and exhaust outlet means from the other of said compartments; a peripheral groove in said inside surface of said elements; a peripheral flange on said partition seated in said peripheral groove and having a substantial area of contact with said inner surfaces of said elements, thereby being restrained against substantial movement of said partition longitudinally in said groove in said sound absorbing element.

4,332,308

SAFETY STEPLADDERS

Clayton E. Larson, Brooklyn, N.Y., assignor to White Metal Rolling & Stamping Corp., Brooklyn, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,294
Int. Cl.³ E06C *1/16, 7/08*
U.S. Cl. 182—120 **9 Claims**



1. In a ladder of the pivoted prop type comprising a front step section having a pair of side rails and a plurality of flat tread steps carried by said side rails, the improvement of a step extender that comprises:

a flat tread portion,

a first web member depending integrally from said tread portion,

a second web member depending integrally from said tread portion at an acute angle to said first web portion, said first and second web portions being joined together at their point of intersection,

an integral lug extending laterally from each end of said first web member, each lug having a hole there through,

a minor section of said tread portion overlapping the upper, rear edge of one of the steps of said ladder,

said step extender being fixed to said ladder side rails by having the rivets that hold said one of the steps upon the ladder side rails pass through said holes in said lugs.

4,332,309

APPARATUS FOR THE ATOMIZATION OF OIL IN A COMPRESSED AIR LINE

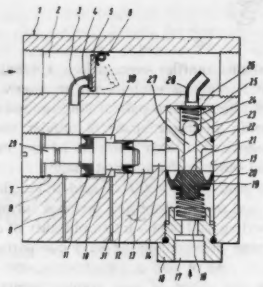
Arnold Bereit, Holbeinstrasse 68, 1000 Berlin 45, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 178,078

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935657

Int. Cl.[3] **F01M** *1/06;* **F16N** *13/16*

U.S. Cl. 184—7 D **4 Claims**



1. Apparatus for the atomization of oil in a line for supplying compressed air to compressed air units, in which apparatus oil, which is fed to a metering chamber via an inlet, can be delivered by a metering piston, which can be pressure-actuated, into the compressed air line, a control line serving to admit pressure to the metering piston, the end of the said control line which leads into the compressed air line being closable by a closing element which, under the effects of the air stream in the compressed air line, is moved out of its closed position into an open position, and a non-return valve, which moves into its open position when the metering piston is actuated, being fitted in the compressed air line between the metering chamber and the oil outlet, characterised in that there is provided between the metering chamber **(13)** and the inlet **(17)** a further valve **(18, 19, 20)** through which pressure is admitted intermittently to the metering chamber **(13)** and which comprises, in addition to a sleeve forming a second non-return valve **(20)**, a valve body **(19)** which, when the metering piston **(10)** is not delivering pressure, is pressed by a spring **(18)** against an opening of a bore **(27)** leading to the first non-return valve **(24, 25)** and to the outlet **(28)**.

4,332,310

DEVICE FOR PREVENTING INTRUSION OF WATER, DUST, ETC. INTO DRUM BRAKE

Kazuhiro Iwai, Iruma, and Hiroshi Enomoto, Higashikurume, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1980, Ser. No. 144,348

Claims priority, application Japan, Jan. 5, 1979, 54-58328

Int. Cl.[3] **F16J** *15/54;* **F16D** *65/10*

U.S. Cl. 188—218 A **1 Claim**

1. In a drum brake of an automotive vehicle, a preventive device against instrusion of water, dust, etc. which comprises in combination:

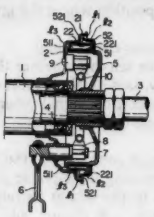
(a) an axle tube connected to a vehicle body;

(b) a wheel axle supported in said axle tube;

(c) a brake panel fixedly secured on said axle tube;

(d) a brake drum fixedly secured on said wheel axle; and

(e) axially extending, annular partition walls provided in a space at a fitting portion between the outer peripheral surface of said brake panel and the outer peripheral surface of said brake drum in parallel with the respective outer peripheral surfaces thereof to form a plurality of labyrinthine grooves, radially inwardly successive of said labyrinthine grooves being sequentially broader in breadth, or longer in length, or both, and all the edges of said partition walls, of said brake panel, and of said brake drum forming the labyrinth being bent radially outwardly for effective prevention of dust, etc. from entering into the brake drum.



4,332,311

SHOE HOLD-DOWN DEVICE IN A DRUM BRAKE

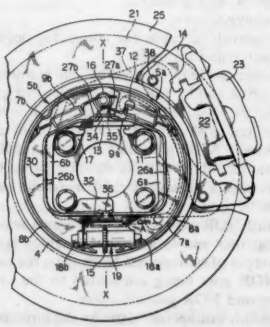
Yoshihisa Nomura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 14, 1980, Ser. No. 149,749

Claims priority, application Japan, Jun. 12, 1979, 54/80075[U]; Jun. 16, 1979, 54/82590[U]

Int. Cl.[3] **F16D** *65/09*

U.S. Cl. 188—340 **11 Claims**



1. In a drum brake wherein a pair of shoes of arcuate shape retained by a stationary backing plate are expanded by actuating means for being slidably abutted onto an internal surface of a rotatable drum so as to restrain the rotation of said drum, a shoe hold-down device for preventing said pair of shoes from rising up from said backing plate, and shoe hold-down device comprising:

a spring of an elastic wire member made into nearly circled-shape symmetrical to an axis, with both ends being adjacent to each other;

retaining means for retaining said spring in a substantially not hampering state from swinging about said axis, said

retaining means consisting of a first retainer which retains both ends of the spring and a second retainer which retains the central portion of the spring, and said first retainer and said second retainer being respectively secured to said backing plate in the vicinity of one of a first position where each one end of the pair of shoe webs are mutually neighboring and a second position where each the other end of the pair of shoe webs are mutually neighboring;

said spring being allowed to urge each web of said pair of shoes toward said backing plate with equal resilient urging force, at a pair of farthest distant symmetrical positions from said axis and by acting on said each web of said pair of shoes on a surface not facing said backing plate.

4,332,312

REVERSE SPEED SHIFT DEVICE FOR A MOTOR VEHICLE CHANGE-SPEED GEARBOX

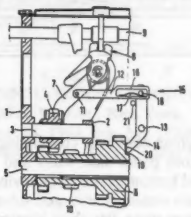
Gustav Sabel, and Horst Schellens, both of Cologne, Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed May 19, 1980, Ser. No. 151,027

Claims priority, application Fed. Rep. of Germany, May 28, 1979, 2921581

Int. Cl.³ B60K *41/26*

U.S. Cl. 192—4 C **7 Claims**



1. A brake device for stopping an after-running transmission gearwheel comprising:

a first gear journalled on a shaft for rotation and axial displacement thereon, being engageable with a second gear formed on the gearwheel as said first gear is moved axially;

a pivotably mounted selector lever adapted to cause axial displacement of said first gear as said selector lever pivots;

a pivotably mounted brake lever having a surface that is forced into and released from frictional contact with a surface on the after-running gearwheel as said brake lever pivots; and

a connecting arm joined to said selector lever and having a removable resilient connection to said brake lever whereby said brake lever applies a braking force to the gearwheel upon pivoting of said selector lever.

4,332,313

BICYCLE BRAKE

Theodore F. Bell, 26 Twin River Dr., Ormond Beach, Fla. 32074

Filed Jul. 25, 1980, Ser. No. 172,137

Int. Cl.³ B62L *5/10*

U.S. Cl. 192—5 **16 Claims**

1. In a bicycle comprising a frame having a hub in which pedal cranks are rotatably mounted, a bicycle brake comprising

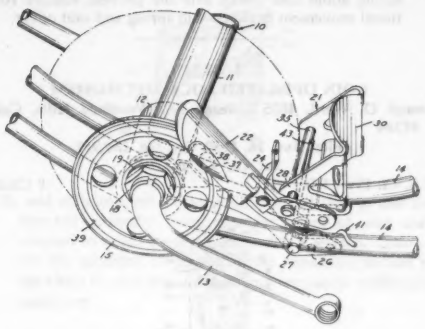
a disc rotatably mounted on said hub for rotation with said crank,

a brake shoe pivoted to said frame and extending upwardly along the front of the rear tire of the bicycle and having a surface for engaging the tire upon actuation of the brake,

a ball clutch arm pivoted on said shoe and extending upwardly and forwardly toward the periphery of said disc,

said arm having opposed walls between which the periphery of the disc extends,

said walls having inwardly facing grooves that taper transversely and longitudinally in a rearward direction such that they become narrower and shallower in a rearward direction,



a pair of balls in each of said grooves between said disc and the respective wall,

and means yieldingly urging said shoe away from said tire such that when the pedal cranks are pedaled rearwardly, said balls travel rearwardly along said grooves to pivot said ball clutch arm and, in turn, the brake shoe bringing the brake shoe surface into frictional contact with the surface of the rear tire.

4,332,314

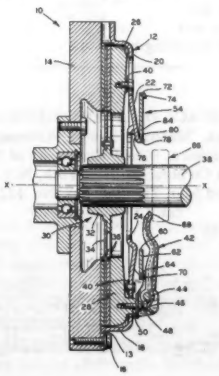
SPRING CLUTCH

Richard A. Flotow, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Sep. 8, 1980, Ser. No. 185,056

Int. Cl.³ F16D *13/44*

U.S. Cl. 192—89 B **12 Claims**



1. In a friction clutch adapted to drivingly connect rotatable drive and driven members, said clutch having a central axis about which said drive and driven members are rotatable, said clutch comprising:

a cover secured to said drive member for rotation therewith,

a pressure plate connected to said cover for rotation therewith and for limited axial movement relative thereto,

a pivotable lever disposed outside of said cover for moving

said pressure plate axially relative to said cover into and out of engagement with said driven member and

an annular spring compressed between said cover and said lever;

a improvement comprising

spring restraint means attached to said cover, and

positioning means attached to said spring, said positioning means engaging said spring restraint means to locate said spring about said clutch axis and prevent relative rotational movement between said spring and said cover.

4,332,315

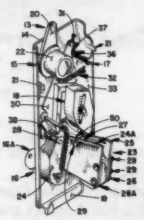
COIN OPERATED LOCK MECHANISM

Joseph O. Ward, 4835 Galendo St., Woodland Hills, Calif. 91364

Filed Jun. 16, 1980, Ser. No. 159,961

Int. Cl.³ G07F *1/04*

U.S. Cl. 194—1 G **9 Claims**



1. A coin operated lock mechanism including a supporting front plate with a vertically sloping aperture for depositing coins, a coin channel normally in communication with said aperture to receive and stack a given complement of deposited coins, a means to provide rotational movement of said coin channel once said coin channel has stored the required complement of coins, a locking latch rotatably supported by said front plate for locking a door in a closed position, wherein said coin channel comprises:

a support base rotatably supported by said rotation means;

a coin support wall adjustably mounted to said support base;

a coded shim set;

a depth roller; and

a plurality of mounting hardware.

4,332,316

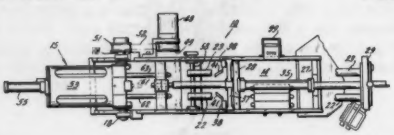
CUP-STACK DELIVERY MECHANISM

John P. Skrypek, Mahwah; Robert Williams, Randolph, and James W. Dominico, West Paterson, all of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Mar. 21, 1980, Ser. No. 132,514

Int. Cl.³ B65G *57/28*

U.S. Cl. 198—425 **7 Claims**



1. A takeoff-delivery mechanism for cup-like containers, said mechanism including an accumulator wherein a horizontal supply stack of nested containers is replenished by adding containers to such supply stack at its rear end; a delivery device disposed forward of said accumulator; a transfer device for delivering removed stacks, each containing a predetermined number of containers, from a supply stack in said accumulator to said delivery device; said delivery device receiving each removed stack in a horizontal position and being operable to discharge removed stacks therefrom in a vertical position into a receiving means; said delivery device receiving a removed stack through the rear end of the delivery device; said delivery device being generally horizontal when receiving removed stacks and being generally vertical when discharging removed stacks; said delivery device having the front end thereof raised to discharge removed stacks through the rear end of the delivery device.

4,332,317

SCRAPER CHAIN CONVEYOR

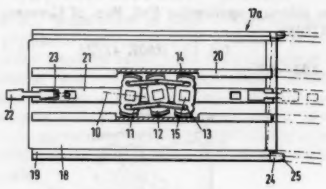
Karl Bähre, Gladbeck; Werner Böer, Castrop-Rauxel; Jörg Richter, Wattenscheid; Gerald Seebacher, Recklinghausen, and Hans Warnke, Herne, all of Fed. Rep. of Germany, assignors to Kloeckner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 162,032

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926798

Int. Cl.³ B65G *19/24, 19/28*

U.S. Cl. 198—734 **14 Claims**



1. A scraper chain conveyor comprising a supporting trough defining a bottom plate, side walls and intermediate guides provided on said bottom plate, a conveying chain assembled of ring-shaped chain elements arranged substantially perpendicularly to the bottom plate, flat chain elements arranged substantially parallel to said bottom plate, and of scraping elements, said flat chain elements being guided between said intermediate guides and being linked to said ring-shaped elements with a play sufficient to permit sliding motion of respective chain elements in the longitudinal direction of the chain, said scraping elements being shaped to enclose with a predetermined play the contour of the adjoining flat chain elements, and at least one driving unit arranged between said side walls of said trough and including a chain wheel drivingly engaging said flat chain elements, said conveyor chain being a double chain having two parallel sets of said ring-shaped chain elements connected by said flat chain elements with a play sufficient to permit said longitudinal sliding motion without any self-locking effect, said flat chain elements being provided in the range of said ring-shaped chain elements with oblong holes for accommodating the latter and with a central hole for engaging said chain wheel.

4,332,318

STORAGE VIAL FOR SOFT CONTACT LENSES

Michael A. Feldman, 864 Glenridge Ave., North Woodmere, N.Y. 11598

Filed Jan. 28, 1980, Ser. No. 115,711

Int. Cl.³ A61F *9/00*; B65D *85/00*

U.S. Cl. 206—5.1 **11 Claims**

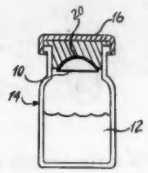
1. In combination, a soft-contact lens and a vial for storing said soft-contact lens permitting easy retrieval of the stored lens, said lens having a substantially spherical shape, said vial comprising

a generally cylindrical bottle containing a solution in which said lens is stored at the bottom of said bottle,

a closure adapted to close said bottle in fluid tight relationship,

seating means provided in said closure, said seating means having a curvature substantially similar to the curvature of said lens,

said seating means comprising a concave surface with the concavity facing to the bottom of the bottle, said concave surface substantially conforming to the shape of said soft-contact lens, said closure closing said bottle in said fluid-tight relationship, the closure and the bottom of said bottle



being spaced apart by a distance greater than the diameter of said lens so that said bottle has a depth sufficient to permit said lens to descend from the bottom to said closure, convex surface first, to be seated on said seating means when said bottle is turned upside down, said lens adhering to said seating surface by capillary attraction when said vial is returned right-side up which enables the lens to be retrieved easily from said closure when removed from said bottle.

4,332,319

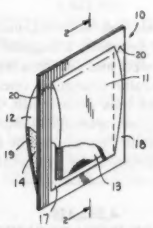
HYGIENIC COMFORT PRODUCT

David L. Hurwood, 26 E. 93rd St., New York, N.Y. 10028

Filed Jun. 25, 1980, Ser. No. 162,853

Int. Cl.³ B65D *81/22, 81/32;* **A45D** *40/00*

U.S. Cl. 206—210 **4 Claims**



1. A hygienic product for cleaning, soothing and comforting the rectal area of the human body, comprising

(a) a napkin moistened with a liquid capable of cleaning the rectal area of the body without irritating the skin of that area, said liquid containing a germicidal agent not harmful to said skin,

(b) a first air-tight compartment containing the napkin,

(c) a quantity of powder capable of absorbing moisture and non-irritating to the skin of the rectal area, and

(d) a second air-tight compartment containing the powder.

4,332,320

PENDANT DISPLAY CARD

Jeffrey A. Feibelman, Cranston, R.I., assignor to A & H Mfg. Co., Johnston, R.I.

Filed Oct. 27, 1980, Ser. No. 201,170

Int. Cl.³ B65D *85/56, 85/58*

U.S. Cl. 206—45.14 **9 Claims**

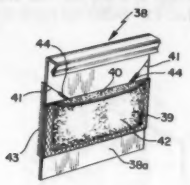
1. A jewelry display card comprising:

A. a cellulosic card;

B. means for suspending said cellulosic card from a support;

C. a flexible synthetic foam sheet located on one surface of said card with at least a portion of the perimeter thereof bonded to said surface forming an enclosure;

D. access means for permitting entry to said enclosure; and



E. said cellulosic card having slits formed therein that are directed inwardly from opposite edges of said card adapted to receive and retain therein a jewelry chain or the like mounted on said card, the remaining portion of the chain on said one surface being receivable within said enclosure.

4,332,321

SHAVING KIT

Otto Wratschko, 4117 N. Broadway, Chicago, Ill. 60613

Continuation-in-part of Ser. No. 68,861, Dec. 12, 1979. This application Oct. 31, 1980, Ser. No. 202,720

Int. Cl.³ A45C *11/00;* **B26B** *19/38*

U.S. Cl. 206—228 **4 Claims**

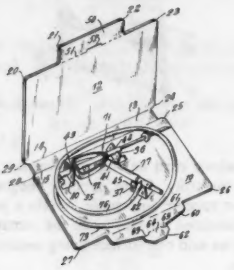
1. A shaving kit comprising an elongated handle member defining a gripping axis and having a socket opening at one end, an elongated support arm having a socket member at one end disposed in and movably captured by said socket opening, position defining means between said socket member and said handle member for defining first and second angular positions of the axis of said support arm respectively generally aligned with said gripping axis of said handle member and angularly related to said gripping axis, and an elongated blade support pivotally supported on an outer end of said elongated support arm and pivotable between a first stored position generally aligned with said axis of said elongated support arm and a second operative position extending generally perpendicular to said elongated support arm, the length of said support arm and the angle of said second angular position configured to place said blade support substantially away from said gripping axis, whereby a blade inserted in said blade support is positionable to facilitate case ease of shaving.

4,332,322

FOLDER TO HOLD COIL OF PLASTIC TUBING WITH CLAMP AND FITTINGS

Harold R. Jaeschke, Milwaukee; Alan Linder, Wauwatosa, and Daniel J. Boyle, Hartland, all of Wis., assignors to Champion International Corporation, Stamford, Conn.

Filed Sep. 2, 1980, Ser. No. 182,854
Int. Cl.[3] B65D *83/10, 5/50*
U.S. Cl. 206—364 4 Claims



1. A folder-container for securing a sterile coiled tube having at least one fitting attached to one end thereof, said folder-container comprising:

a substantially rectangular side wall;

a bottom wall foldably connected to a first edge of said side wall and disposed perpendicular to said side wall;

a top wall foldably connected to a second edge of said side wall, said second edge of said side wall being opposite said first edge thereof, said top wall being perpendicular to said side wall and parallel to and in register with said bottom wall;

at least two fitting holding tabs foldably connected to said bottom wall and located equidistant from said side wall, the plane of each said fitting holding tab being perpendicular to both said bottom wall and said side wall, each said fitting holding tab having a notch formed in the end thereof opposite said bottom wall for securing said fitting; and

at least one tube holding tab foldably connected to and perpendicular to said bottom wall, each said tube holding tab having a notch formed in the end thereof opposite said bottom wall for holding said tube, each said tube holding tab being substantially aligned with a radius of curvature of said coil whereby insertion of said fitting in said fitting holding tabs and insertion of said tube in said tube holding tab retains said coiled tube in a coiled arrangement within said folder-container.

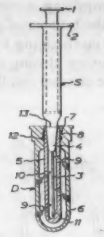
4,332,323

DESTRUCTION DEVICE FOR INJECTION NEEDLES

Erik G. B. Reenstierna, Bjärred, Sweden, assignor to Konsivenior AB, Sweden

PCT No. PCT/SE78/0064, § 371 Date Jun. 26, 1979, § 102(e) Date Jun. 22, 1979, PCT Pub. No. WO79/00239, PCT Pub. Date May 3, 1979
PCT Filed Oct. 26, 1978, Ser. No. 261,198
Claims priority, application Sweden, Oct. 26, 1977, 772041
Int. Cl.[3] B65D *85/00;* A61M *5/32;* B02C *19/12;* B21D *7/00*
U.S. Cl. 206—365 8 Claims

1. Device for the destruction of the injection needle of an injection syringe, characterized by a sleeve (**6**; **14**) in which the injection needle (**3**) may be inserted and which is provided, in its interior, with spaced apart elements (**9**; **17**) in the longitudinal direction of the sleeve and projecting from opposite directions towards the intended path of movement of the needle in the sleeve, and members (**5**; **16**) movable with respect to the sleeve in the longitudinal direction thereof and disposed, during their movement, to influence at least one of said elements in



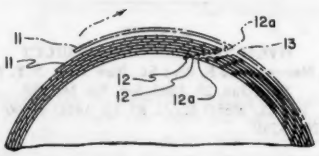
such a manner that this moves towards and into the path of movement of the needle.

4,332,324

MANUFACTURE OF ROLLS OF FIBROUS WEB MATERIAL

Thomas B. Howard, and Gerald H. Puissant, both of Green Bay, Wis., assignors to American Can Company, Greenwich, Conn.

Filed Feb. 6, 1980, Ser. No. 119,162
Int. Cl.[3] B65D *85/67, 85/671*
U.S. Cl. 206—389 2 Claims



1. In a roll of fibrous web material, means securing its tail comprising a series of generally triangular tabs in linear array extending across said web, and cut from layers of said material to form aligned generally triangular openings in successive underlying layers, said tabs folded into, and frictionally retained within, said aligned openings along sides thereof closer to said tail and substantially parallel to the axis of said roll, said tabs presented in the direction of presentation of said tail.

4,332,325

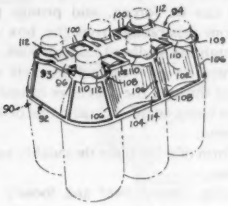
BOTTLE PACKAGE WITH PROMOTIONAL CARD INSERT

Guelfo A. Manizza, Blauvelt, N.Y., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 184,639, Oct. 8, 1980. This application Mar. 23, 1981, Ser. No. 243,061
Int. Cl.[3] B65D *75/54, 77/24*
U.S. Cl. 206—216 5 Claims

1. An article package comprising a group of articles having the general form of relatively short neck bottles with cap type closures, which articles are arranged in double row transversely paired relation and held in group arrangement by a shroud formed of a continuous plastic which is at least semi-transparent and which is shaped or otherwise formed so as to provide a top wall forming panel and a depending sidewall formation extending about the perimeter of the top wall forming panel, said top wall forming panel engaging portions of the cap closures, said sidewall formation extending downwardly in tightly gripping relation to top portions of the articles and having a depth which extends below at least to the bottom of the neck forming portions of the articles with a peripherial dimension which results in tightly gripping outboard portions of the surfaces of the corner articles in the group, and a promo-

tional display card of bendable sheet material trapped between the shroud and the top portions of the articles, which display card has a center panel extending transversely relative to the articles, said center panel having spaced apertures adapted to accommodate the neck portions of the middle row of articles and panel formations at opposite ends of the center panel



which extend downwardly along at least a portion of the sidewall formation and which lie in close proximity to the inner face of the sidewall formation so that display material on the surface is visible through the shroud material, said panel formations having a dimension formation greater than the dimension of said center panel relative to the sidewall formation.

4,332,326

PLASTIC NETTING FOR LOAD UNITIZATION

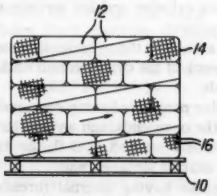
Michael G. Kelly, Blaine, and Eugene R. Pastien, Moundsview, both of Minn., assignors to Conwed Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 35,851, May 4, 1979, Pat. No. 4,208,457. This application Apr. 10, 1980, Ser. No. 139,131

The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.

Int. Cl.³ B65D *77/08, 19/00, 85/62, 6/08*

U.S. Cl. 206—497 **16 Claims**



1. In a palletized load utilizing a plastic net material as the pallet wrap, the improvement comprising said plastic net when it is wrapped about said palletized load being composed of a plurality of sets of spaced strands, the strands of at least one set being substantially parallel and being in the longitudinal direction of the net, said one set of strands being stretch-oriented to a sufficient degree so that it is incapable of being stretched further by more than about 15% in said stretch-oriented direction when stressed under the tension to which normal palletized loads are subjected at temperatures up to about 180° F.

4,332,327

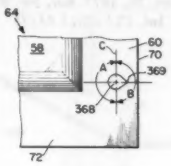
ACCURATELY PLACED STRESS CONCENTRATING APERTURE IN FLEXIBLE PACKAGES

Arthur E. Frohwerk, Harrison, Ohio, and David E. Enting, Americas, Ga., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 6, 1980, Ser. No. 147,018

Int. Cl.³ B65D *65/26*

U.S. Cl. 206—604 **7 Claims**



1. In a filled and sealed flexible pouch having a body portion and at least one stress concentrating aperture in a seal area thereof, said aperture being located adjacent an edge of said pouch to provide easy opening of said pouch by manual tearing, the improvement wherein said aperture includes at least one localized stress concentrating feature to preferentially initiate a tear generally in the direction of said adjacent edge of said pouch when stress is applied to the seal area containing said aperture, said localized stress concentrating feature in said aperture being located within that portion of said seal area which extends from the point of coincidence with the maximum dimension of said aperture, as measured in a direction substantially parallel to said adjacent edge of said pouch, to said adjacent edge of said pouch.

4,332,328

MOBILE CRANE

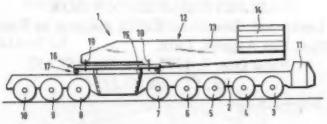
Günter Otto, Hilden, and Peter Eiler, Düsseldorf, both of Fed. Rep. of Germany, assignors to Firma Leo Gottwald KG, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,330

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844819

Int. Cl.³ B66C *23/84, 13/00*

U.S. Cl. 212—180 **15 Claims**



1. In a mobile crane including a carriage, an upper chassis, means for rotatably supporting said upper chassis on said carriage, said means including rotational connection means for affording rotational movement about a first circle having an upright axis, the improvement comprising that said rotatably supporting means further includes an intermediate frame located between said upper chassis and said carriage and additional means in addition to said rotational connections means for connecting said upper chassis rotatably to said carriage, said additional means being operative to accommodate high loads which exceed the maximum load which said rotational connection means is constructed to withstand, and to distribute said high loads to said carriage, said additional means and said rotational connection means rotatably mounting said intermediate frame on said carriage between said carriage and said upper chassis with said additional means providing for rotational movement about a second circle coaxial with and spaced outwardly from the first circle, said intermediate frame span-

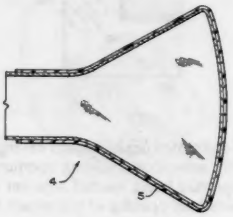
ning from the first circle to the second circle on opposite sides of the first circle and means detachably fixing said upper chassis to said intermediate frame so that said upper chassis can be removed as a unit from said intermediate frame and carriage.

4,332,329

IMPLOSION COATINGS

Roger L. Scriven, and Wen-Hsuan Chang, both of Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 25, 1977, Ser. No. 845,103
Int. Cl.³ H01J *61/35*
U.S. Cl. 220—2.1 A **11 Claims**



1. An implosion protected evacuated glass enclosure which comprises in combination:

(A) a sealed evacuated glass enclosure having exterior and interior surfaces, through at least a portion of said surfaces light is transmitted; and

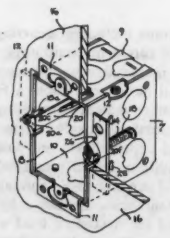
(B) a transparent, non-tacky, scratch-resistant, polyurethane film on the exposed exterior surface of said glass enclosure having a low degree of adhesion to the exterior surface of said sealed evacuated glass enclosure, said low degree of adhesion being such that said polyurethane film adheres to said glass surface with a 90° peel strength of less than about 20 pounds per lineal inch and the mechanical properties of the polyurethane film are such that when a free film of approximately 1 to 2.5 mils is subjected to tensile testing according to ASTM D-638-72, the film exhibits a tensile strength of from about 1000 to 15,000 pounds per square inch and a corresponding elongation of from about 150 to 1500 percent.

4,332,330

ELECTRICAL CUT-IN BOX

Alan C. Lockwood, Rosemead, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.

Filed Dec. 7, 1977, Ser. No. 858,437
Int. Cl.³ H02G *3/14*
U.S. Cl. 220—3.5 **4 Claims**



1. In an open ended electrical box having a pair of opposite side walls with elongated slots formed therein and a strap bridging the ends of said slots, means for clamping said box between the inside and outside surfaces of a wall, comprising:

a bracket fitted in each of slots, each of said brackets including a flat strip, a tab at each end of said strip extending substantially perpendicularly therefrom, said tabs having apertures formed therein, one of said tabs having a hook thereon, said hook extending in a direction substantially parallel to said flat strip and substantially normal to said tabs, the flat strips of the brackets having prongs extending outwardly therefrom at an acute angle relative thereto, said slots having widened portions through which the prongs can be forced, said prongs preventing the brackets from separating from the box once they are forced through the widened slot portions,

a screw mounted on each of said brackets with the shank thereof fitted through the apertures in said tabs, the head of said screw being adjacent to said one of said tabs having a hook thereon,

a cleat in the form of a flat plate threadably engaged by each of said screws,

said hooks being slipped over and loosely engaging said straps thereby maintaining the screws alongside the side walls of the box while said screws are being tightened, said box having lips extending outwardly from the edges thereof,

whereby when said screws are tightened, the cleats are drawn towards the inside surface of the wall to clamp the wall between the cleats and the lips of the box.

4,332,331

ROTATABLE VALVE PROTECTOR FOR COMPRESSED GAS CYLINDER

Norman C. Fawley, 255 Rafael Walk, Long Beach, Calif. 90803

Filed Jun. 3, 1980, Ser. No. 156,181
Int. Cl.³ B65D *25/00*
U.S. Cl. 220—85 P **10 Claims**

1. A device for protecting a valve mounted in a neck of a compressed gas cylinder and for serving as a handle for the cylinder, comprising:

a neck ring affixed to the cylinder in concentric relationship with the neck of the cylinder, said neck ring having external threads;

a hollow valve protector having open ends, a lateral opening between the open ends, and an annular inwardly directed flange at one open end, said flange having mutually orthogonal bearing surfaces; and

a locking collar having internal threads mating with the external threads of the neck ring and an outwardly directed flange overlapping the inwardly directed flange of the valve protector, the locking collar having a vertical bearing surface and the outwardly directed flange having a horizontal bearing surface which engage the mutually orthogonal bearing surfaces of the valve protector,

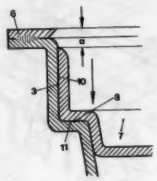
the locking collar further including a sleeve extending beyond the internal threads of the locking collar in the direction of the cylinder for frictional engagement with the cylinder,

whereby the valve protector is freely rotatable around the neck of the cylinder, even under heavy loading.

4,332,332
CONTAINER AND CLOSURE HAVING FRANGIBLE OPENING MEANS

Ole Ingemann, Svendborg, Denmark, assignor to A/S Haustrup Plastic, Langeskov, Denmark

Filed Nov. 28, 1980, Ser. No. 210,896
Claims priority, application Sweden, Dec. 17, 1979, 7910362
Int. Cl.³ B65D 17/40
U.S. Cl. 220—276 8 Claims



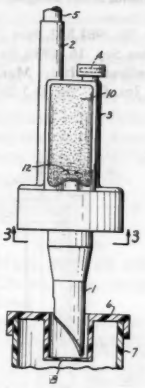
1. In a container (4) with an opening facing upwards in the top surface and with a closure (15) for said opening consisting of a fastener (6) and a lid (1) which are joined together all the way round by a failure zone (2), said closure being inserted into the opening and forming a seal with the container, and in which the lid is broken open and is torn along the failure zone by a locally applied force, preferably under pressure, whereby force applied in an inward direction will cause the lid to move inwards to a point at which, having moved over a distance a, it will on the one hand make contact with a surface (8) located on the lid running parallel with the top surface, and will on the other hand make any further opening difficult, and in which the lid is also provided with a gripping device for removing the fully or partly loosened lid, the improvement wherein the failure zone (2) of the lid (1) is located at the point at which the internal surface (3) of the opening meets the top surface of the opening, whereby a flange (5) on the container (4) is bonded to the attachment ring (6) of the closure (15), the lid (1) within the failure zone (2) on the other hand supporting the gripping device (9) with which the container is opened, and on the other hand is dished inwards in such a way that the dishing (7) at its outer edge forms a guide (10) against the essentially cylindrical internal surface (3), whereby the surface (8) parallel with the top surface is connected to the guide (10), said surface (8) after the lid (1) has been torn open and if applicable after the lid has moved inwards over the distance a making contact with a ledge (11) located inside the container (4) and forcing the guide (10) against the wall of the container (12).

4,332,333
PUNCTURE SPIKE HANDLE

Mark Linsey, Anaheim, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 21, 1980, Ser. No. 170,502
Int. Cl.³ B67B 7/24
U.S. Cl. 222—83 1 Claim

1. A handle in combination with and for axial and rotational manipulation of a puncture spike that extends forwardly from the handle, said handle comprises: a body having a longitudinal axis and having a pair of passages extending longitudinally through the body and through the spike; a pair of opposed gripping surfaces; each of said gripping surfaces having a forward end and a rearward end and at least a portion that is substantially flatter in a transverse direction than a circular path generated by rotating the handle about said longitudinal axis; the gripping surfaces diverge outwardly in a forward direction to provide a greater angle between the gripping surfaces adjacent the forward ends than adjacent the rearward ends; wherein the gripping surfaces are generally concave in the longitudinal direction but are generally flat in a lateral direction, the gripping surfaces are approximately parallel adjacent their rearward ends and diverge outwardly by an angle greater than 90 degrees adjacent their forward ends, each of said gripping surfaces extends around less than one half of the handle's transverse perimeter and has a roughened texture; the handle has a penetration stop that extends beyond and is connected to forward end portions of the gripping surfaces, wherein the penetration stop is a skirt, said skirt having a top end portion and a bottom end portion; the bottom end portion of the spike engages an item being punctured, the skirt surrounds the puncture spike, the spike having a downstream end which extends outwardly from the skirt, the gripping surfaces

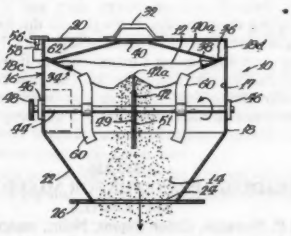


have the forward end portions on laterally protruding members, the laterally protruding members having outer edges that are transversely concave for gripping to gain additional leverage for rotating the handle and the spike, the protruding members extend laterally outward from the skirt and are connected to the top end portion of the skirt and are spaced rearwardly from the bottom end portion so that the protruding members are always spaced from the item being punctured, the gripping surfaces are on opposite sides of the pair of passages extending through the body.

4,332,334
DUSTLESS BAG BREAKER

Thomas T. Mian, 701 Huntington Commons, Unit 412, Mount Prospect, Ill. 60056

Filed May 22, 1980, Ser. No. 152,378
Int. Cl.³ B67B 7/24
U.S. Cl. 222—83.5 19 Claims



1. A dispenser for dispensing dusty material from a bag, comprising:

a container for receiving a bag and defining a discharge outlet for dispensing said dusty material;

bag holding means for holding said bag in a generally horizontal position within said container;

a rotatable cutter for cutting said bag within said container; and

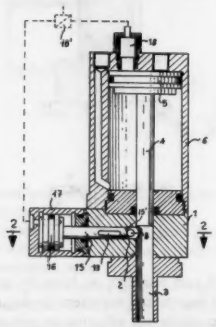
at least one rotatable flapper positioned about a common axis of rotation with said cutter within said container for beating said bag after said bag is cut to enhance discharge of said dusty material from said bag.

4,332,335

HEAD FOR MIXING AND EJECTING INTERACTING LIQUID COMPONENTS, FOR MOLDING PLASTIC MATERIALS

Carlo Fiorentini, Saronno, Italy, assignor to Afros S.r.l., Varese, Italy

Continuation of Ser. No. 961,853, Nov. 17, 1978, abandoned. This application Sep. 16, 1980, Ser. No. 187,826
Claims priority, application Italy, Mar. 9, 1978, 21022 A/78
Int. Cl.³ B67D *5/60*
U.S. Cl. 222—145 **9 Claims**



1. A head for continuously mixing and ejecting interacting liquid components into a mold for molding articles made of plastic material, comprising in combination: a body defining a mixing chamber for the components; a discharge duct having an outlet; at least a first and a second infeed duct for injecting individual components into said mixing chamber for a predetermined time period; exit port means for establishing fluid communication between said infeed ducts and said discharge duct, said infeed ducts being provided with outlet orifices that open into said mixing chamber close to said exit port means; and piston means for controlling fluid communication between said infeed ducts and said discharge duct outlet so that fluid communication is established therebetween during substantially the entire predetermined time period when said infeed ducts are injecting components into said mixing chamber so that injected components flow continuously out of said mixing chamber through said discharge duct and are thoroughly mixed during their passage through said discharge duct, said mixing chamber forming an angle of substantially 90° with said discharge duct and having a length shorter than and a volume less than that of said discharge duct so that components injected into said mixing chamber mix with each other and overflow into said discharge duct in a swirling flow.

4,332,336

SPREADING APPARATUS FOR MIXED DENSITY MATERIALS

Edward P. Novacek, Cedar Rapids, Nebr., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

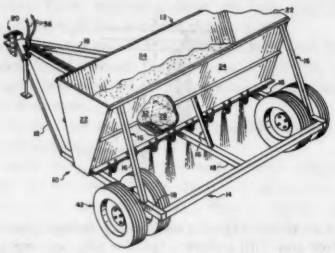
Filed Jul. 3, 1980, Ser. No. 165,915
Int. Cl.³ B65D *17/34*
U.S. Cl. 222—269 **10 Claims**

1. A spreading apparatus for uniformly spreading a blended granular product containing ingredients of different specific gravities, said apparatus comprising:

(a) a large hopper for receiving a blended granular product, said hopper having an open top, side walls, end walls and a bottom portion;

(b) a plurality of smaller hoppers disposed at uniform intervals across the bottom portion of said large hopper, each of said smaller hoppers having a bottom portion with a discharge opening therein, said smaller hoppers each being adapted to receive equal portions of the granular product loaded in said large hopper by gravity flow;

(c) a plurality of auger-type conveyors, one of said auger-type conveyors being horizontally disposed in the bottom portion of each of said smaller hoppers on an axis parallel



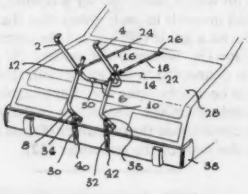
to the direction of travel of the apparatus during spreading, each of said auger-type conveyors being adapted to receive granular product by gravity flow and to discharge metered amounts of said granular product through the associated discharge opening at the same rate in cooperation with all the other discharge means of said spreading apparatus to thereby obtain uniform spreading of said granular product.

4,332,337

FOLDABLE BICYCLE CARRIER

Irving W. Kosecoff, 3201 Butler Ave., Los Angeles, Calif. 90066

Filed Jan. 22, 1981, Ser. No. 227,517
Int. Cl.³ B60R *9/10*
U.S. Cl. 224—42.03 B **11 Claims**



1. A foldable carrier for being mounted on motor vehicles, said carrier comprising:

a U-shaped hanger member formed to have a pair of carrier bars each joined at one end thereof by a support bar;

a pair of L-shaped leg members having a short portion and a long portion;

locking means for movably attaching each of said leg members to a different one of said carrier bars, said locking means including a pair of locking mechanisms each including:

a leg bracket slideably mounted on a leg member;

a locking bracket mounted on a carrier bar;

a retention bolt extending through said carrier bar, said locking bracket and said leg bracket to form a pivot;

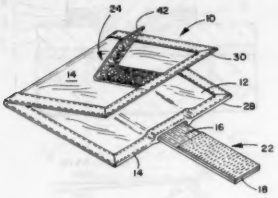
a positioning member mounted on said leg member for engaging said locking bracket and said leg bracket when said carrier is locked in an extended operative configuration with said long portion of said leg members being parallel to each other and transverse to said carrier bars and the short portion of said leg members being tilted away from each other.

4,332,338

WALLET WITH ELASTIC STRAP

James S. Christiansen, 5288 Austin Rd., Santa Barbara, Calif. 92111

Filed Nov. 24, 1980, Ser. No. 209,759
Int. Cl.³ A45C 1/06
U.S. Cl. 224—222 3 Claims



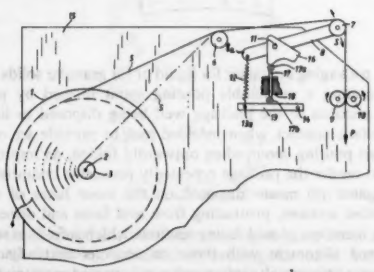
1. A wallet formed of inner and outer sheets of flexible material both having opposite longitudinal edges and opposite transverse edges, and said inner and outer sheets are permanently secured together at one longitudinal edge and both opposite transverse edges to define a currency receiving pocket open at the unsecured longitudinal edges of said inner and outer sheets, a pocket liner located between said inner and outer sheets and having opposite longitudinal and opposite transverse edges, and said pocket liner is permanently secured to said outer sheet of flexible material, an elongate elastic strap having one free end and one anchored end secured to said outer sheet of material and said strap passes freely behind said currency receiving pocket internally between said outer sheet of material and said pocket liner so that the portion thereof behind said currency receiving pocket is freely stretchable and retractable, and said free end of said strap protrudes from between said outer sheet of material and said pocket liner between locations at which said pocket liner and said outer sheet of material are secured together, and mating pads, one of which bears a multiplicity of minute hooks projecting therefrom and the other of which bears a fine, looped pile releasably engageable with said hooks, and one of said pads is secured to said free end of said elongate strap, and the other of said pads is secured to said outer sheet of flexible material.

4,332,339

WEB-ADVANCING APPARATUS

Heinz Lüedemann, and Klaus Schneider, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 162,035
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929611
Int. Cl.³ B65H 23/16, 77/00
U.S. Cl. 226—195 6 Claims



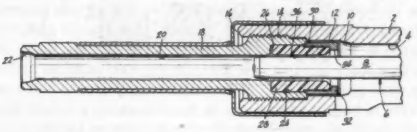
1. In an apparatus for advancing webs, particularly webs of photographic material, from a supply roll to a pull-off device, a combination comprising a member turnable about an axis intermediate the supply roll and the pull-off device to any of a plurality of angularly displaced positions, said member being formed as a tilt arm having first and second end portions; guide means on said member for guiding the web towards the pull-off device and including a roller turnably mounted on said first end portion of said tilt arm, the pull exerted by the pull-off device causing said member to become angularly displaced about said axis; first means for resiliently resisting such angular displacement and including a biasing spring; and second means for varying the resisting force exerted by said first means as a function of the angular position assumed by said member, said second means including a motion-transmitting element movable in response to angular displacement of said arm and varying said resisting force as a function of its movement to respective different positions, and a pivotable control arm, said spring being connected between said control arm and said second end portion of said tilt arm, said motion-transmitting element acting upon and determining the position of said pivotable control arm relative to said second end portion.

4,332,340

PISTON TOOL BUFFER ASSEMBLY

Frederick J. Harris, Clinton, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed May 15, 1980, Ser. No. 150,125
Int. Cl.³ B25C 1/14, 1/18
U.S. Cl. 227—10 5 Claims



1. In combination a piston buffer assembly and a powder-actuated piston-type fastener driving tool said tool having a barrel with a bore and a piston reciprocally slidably mounted in said barrel bore, said buffer assembly comprising:

(a) an annular elastomeric member disposed in said tool in a muzzleward area thereof, said elastomeric member having a bore through which a stem part of said piston extends;

(b) first means in said barrel radially and axially closely confining a muzzleward end portion of said elastomeric member;

(c) second means in said barrel closely radially confining a breechward end portion of said elastomeric member, said means allowing axial expansion of said member in a breechward direction;

(d) means for permitting a portion of said piston having a larger diameter than said stem part to enter said bore of said elastomeric member when said piston is driven in said tool whereby said elastomeric member expands only axially in a breechward direction; and

(e) fixed means in said barrel bore for limiting the extent of breechward expansion of said elastomeric member.

4,332,341

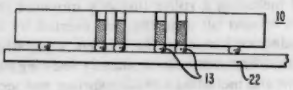
FABRICATION OF CIRCUIT PACKAGES USING SOLID PHASE SOLDER BONDING

Richard H. Minetti, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1979, Ser. No. 107,326
Int. Cl.³ H01L 21/603
U.S. Cl. 228—180 A 13 Claims

1. In the fabrication of circuit packages, a method for bonding solid solder preforms, 13, to the contact members, 12, of an

electronic component CHARACTERIZED IN THAT the preforms are heated to a temperature below the melting point



of the solder while sufficient force is applied to the preforms to produce a bond while the solder is kept in a solid phase.

4,332,342

METHOD OF SOLDERING COMPONENTS TO A THICK-FILM SUBSTRATE

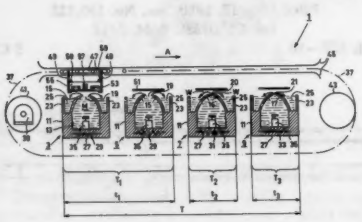
Henricus C. A. van Der Put, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 39,716, May 17, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,525

Claims priority, application Netherlands, May 29, 1978, 7805800

Int. Cl.³ B23K *1/02*

U.S. Cl. 228—180 A **4 Claims**



1. In the method of soldering components to a thick film substrate comprising:

(1) heating an assembly of said substrate with said components locally provided with a layer of solder between said components and said substrate in a preheating phase to a temperature below the melting point of said solder;

(2) heating said assembly to a temperature sufficiently high to cause the solder to melt and flow during a soldering phase and

(3) subjecting said assembly to a temperature during a cooling phase to a temperature below the melting point of said solder;

the improvement wherein through each of said phases the substrate bearing the layer of solder and the components positioned therein is contacted with a heated molten metal heat transfer medium and during the cooling phase the substrate is cooled at a rate sufficiently effective to cool said substrate below 150° C. within 2 seconds.

4,332,343

PROCESS FOR IN-SITU MODIFICATION OF SOLDER COMOPSITION

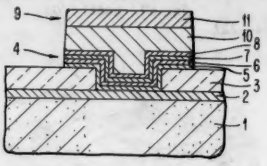
Nicholas G. Koopman, Hopewell Junction; Vincent C. Marcotte, La Grangeville, and Stephen Teed, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

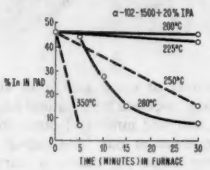
Continuation of Ser. No. 944,224, Sep. 20, 1978, abandoned. This application Apr. 10, 1980, Ser. No. 139,076

Int. Cl.³ B23K *1/00, 35/26, 35/362*

U.S. Cl. 228—231 **6 Claims**

1. A method for in-situ altering the composition of solder alloys containing wetting agents selected from the group of tin and indium comprising fluxing a said solder alloy in its molten form for sufficient time with at least one acid selected from the monocarboxylic acids of alkylated hydrophenanthrene nuclei having the empirical formula $C_{19}H_{29}COOH$, to remove said





EFFECT OF TIME AT TEMPERATURE ON In LEACHING BY α-102 FLUX

wetting agents from said molten solder and to materially reduce to less than 90% of the original content of said wetting agents in said molten solder.

4,332,344

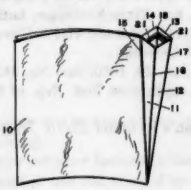
RESEALABLE PACKAGE

Glenn G. Strodthoff, 4808 W. Custer St., Manitowoc, Wis. 54220

Filed Feb. 8, 1980, Ser. No. 119,985

Int. Cl.³ B65D *33/24, 33/38*

U.S. Cl. 229—62 **3 Claims**



1. A packaging container for liquid or for granular solids and incorporating a re-closable pouring spout formed by pleat folded sections of the package well being disposed to lie in face-to-face contact when infolded and to provide an open mouthed pouring spout when outwardly folded, an improvement to render the package repeatedly resealable comprising

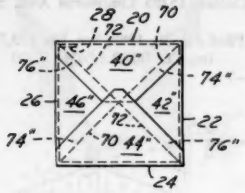
elongated rib means disposed on the inner faces of said folded sections, protruding from said faces and disposed on members of said facing sections which infold, in staggered alignment with those on sections next adjacent thereto to mutually intermesh as tongue and groove when said sections are placed in contacting facing adjacency operably to close said spout, said rib means being of plastomeric material and configured with enlarged bead-like edges to provide a leak proof seal when operably engaged.

4,332,345

CONTAINER WITH INFOLDED BOTTOM CLOSURE

John P. Moran, Pleasant Ridge, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Mar. 20, 1980, Ser. No. 132,014
Int. Cl.³ B65D 5/08
U.S. Cl. 229—37 R 7 Claims



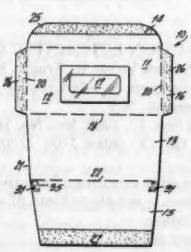
1. A container of paperboard or the like having an overall surface of thermoplastic material that becomes adhesive when subjected to heat, said container comprising four substantially equal width side panels, first and second pairs of opposed bottom closure panels alternately connected to said side panels as extensions thereof and connected one to the other by score lines along their sides for a (predetermined) partial portion of their heights, each bottom closure panel having free cut edges extending at (a predetermined) an angle intermediate the end of said score lines and the centerline of said bottom closure panel and terminating at a point such that the heights of two oppositely disposed panels are each equal to approximately one half the width of a side panel, and the height of at least one other bottom closure panel is (a predetermined amount) greater than one half the width of a side panel, said two oppositely disposed panels each including a pair of diagonal score lines for forming triangular panels whose apices touch one another on the inside of the container, at least a portion of each of said free cut edges being substantially parallel to each respective adjacent diagonal score line, and the end portion of said one other bottom closure panel overlapping the end portion of the fourth bottom closure panel on the outside of the container.

4,332,346

TWO-WAY ENVELOPE

Albert F. Kronman, Locust Valley, N.Y., assignor to 21st Century Envelope Co. Inc., Deer Park, N.Y.

Filed Feb. 12, 1981, Ser. No. 233,979
Int. Cl.³ B65D 27/06
U.S. Cl. 229—73 6 Claims



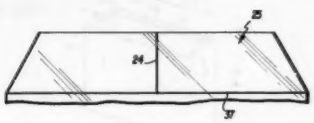
1. An envelope for two-way mailing formed from a one piece blank having substantially rectangular front and rear panels interconnected along three edges to provide a pocket, and an insert opening for said pocket between the unconnected panel edges of the pocket comprising a first sealing flap carried by and integral with one of said unconnected edges, a second, return sealing flap carried by and integral with the other unconnected edge, said second return sealing flap being folded inwardly along the unconnected panel edge of its supporting panel to extend within the pocket and overlie said supporting panel and a spot of adhesive disposed between a portion of the return sealing flap and its supporting panel adjacent their common fold line at each outer end of said fold line whereby a portion of the return sealing flap is secured to its supporting panel at the outer ends thereof.

4,332,347

PLASTIC BAG HAVING UNIQUE TUCK FLAP CONSTRUCTION

William J. Clayton, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,352
Int. Cl.³ B65D 33/24
U.S. Cl. 229—62 4 Claims



1. A plastic bag comprising front and back walls interconnected to one another at their side and bottom edges and defining between them a top opening, a fold-over cuff provided adjacent said top opening for folding over and closing said top opening, said fold-over cuff being formed by a first cuff wall extending along a top portion of said front wall and attached to said front wall at the side and top edges thereof to form a bottom opening between said cuff wall and said front wall at a front side of said bag, and, in tuck-in cuff extending from said back wall in a manner which allows it to be tucked in over an object placed in said bag prior to the closing of said top opening by said fold-over cuff, said tuck-in cuff being formed by a second cuff wall extending along a portion of said back wall which extends beyond said top opening, said second cuff wall being attached at the top and side edges thereof and along at least one vertical line intermediate its side edges to said back wall portion to form a plurality of bottom opening pockets between said back wall and second cuff wall on the back side of said bag.

4,332,348

CURRENCY RECEPTION AND STORAGE DEVICE

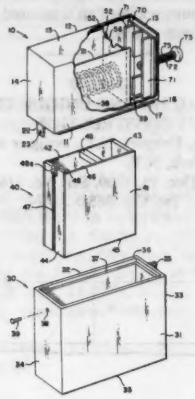
Richard M. Nordin, 1109 N. Puente St., Brea, Calif. 92621

Filed Jan. 4, 1980, Ser. No. 109,656
Int. Cl.³ B65G 57/03
U.S. Cl. 232—43.3 5 Claims

1. A device for collecting currency or the like, comprising:
(a) an exterior housing having a slot adapted to receive currency;
(b) a bill receptacle, disposed within the interior of said housing, having an opening at one end thereof;
(c) at least two opposed flange members secured to said open end spaced apart a distance less than the horizontal dimension of a vertically supported bill;
(d) a first plate member disposed within the interior of said bill receptacle;
(e) means for biasing said first plate member against said flange members;
(f) a bill receiving chamber proximate said open end adapted to receive a bill from the slot through said exterior housing;
(g) means for supporting received bills upon at least a minor portion of a lateral edge thereof within said bill receiving chamber;
(h) means for engaging a major portion of the vertical di-

mension of a received bill from an engagement position proximate the supported lateral edge of said bill;

(i) means for articulating said bill-engagement means from a first home position proximate one side of said bill-receiving chamber opposite said open end across said chamber



and through said open end past said flange members and back into said home position whereby to carry a bill from said bill-receiving chamber into said bill receptacle; and

(j) a coin token receptacle subjacent said bill support means and communicating through said bill receiving chamber with the slot of said exterior housing.

4,332,349

CENTRIFUGE

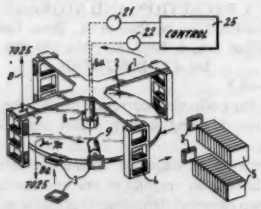
Jürgen Dietrich, Lilienthal; Hansjörg Klotz, Sottrum, and Bernd Hofer, Lemwerder, all of Fed. Rep. of Germany, assignors to Erno Raumfahrttechnick GmbH, Bremen, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 178,155

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1979, 2932849

Int. Cl.³ B04B *9/10, 11/00*

U.S. Cl. 233—1 R **7 Claims**



1. In a centrifuge having a first rotor for receiving carrier and holder units containing, e.g., biological specimens, the rotor having a shaft, the improvement comprising:

at least one additional rotor mounted concentrically to said shaft, but being independently rotatable, the additional rotor being provided with means for holding a carrier and holder unit;

means for driving the additional rotor independently from the centrifuge rotor; and

control means connected to the means for driving for synchronizing the rotoational speeds of the rotor and the additional rotor, to permit transfer of a carrier and holder unit from one to the other.

4,332,350

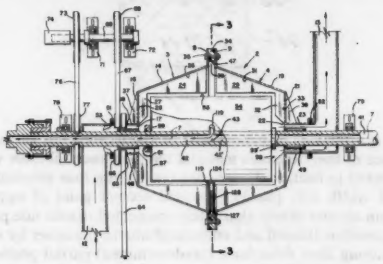
CENTRIFUGE APPARATUS FOR SEPARATING ENTRAINED SOLIDS FROM INDUSTRIAL WASTE WATER

Jack A. McClellan, 15285 Charmeran Ave., San Jose, Calif. 95124

Filed Jul. 30, 1980, Ser. No. 173,736

Int. Cl.³ B04B *11/081, 1/00*

U.S. Cl. 233—7 **16 Claims**



1. In a centrifuge apparatus for separating entrained solids from industrial waste water, the combination comprising:

(a) a housing assembly rotatable about a central axis and having inlet and outlet passageways for the admission of industrial waste water containing a high proportion of entrained solids and for the discharge of such industrial waste water after a large proportion of the solids have been removed therefrom, said housing assembly including rotatable inner and rotatable outer housing shells defining therebetween a passageway for said industrial waste water between said inlet and outlet passageways;

(b) a collection chamber for collecting said solids within said housing assembly;

(c) rotatable shaft means on which said housing assembly is rotatably mounted, at least one portion of said shaft means having a central bore therethrough for the discharge of solid material extracted from said industrial waste water stream; and

(d) dredge means mounted within said housing assembly on said rotatable shaft means and movable through said collection chamber for picking up segregated solids extracted from said industrial waste water stream and transporting said solids to the exterior of said housing through said hollow shaft means.

4,332,351

BLOOD FRACTION EXTRACTING CENTRIFUGE

Robert M. Kellogg, and Victor R. Kruger, both of Washington Crossing, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,409

Int. Cl.³ B04B *1/04, 11/06*

U.S. Cl. 233—38 **4 Claims**

1. A blood separation centrifuge for providing a plurality of plasma samples from a sample volume of whole blood, comprising, in combination,

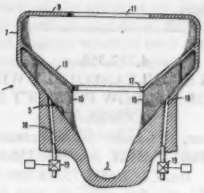
a centrifuge rotor element

a central sample well in said rotor element

a plurality of radially oriented sample chambers in said rotor element, each adapted to receive blood from said well in response to centrifugal force exerted on the blood in said well, said chambers being at least partially defined by a plurality of septa extending radially from a first locus disposed near the axis of the centrifuge to a second locus near the outer wall of the centrifuge and spaced from said

outer wall to provide a communicating channel for said chambers, and

a corresponding plurality of extraction ports, one for each sample chamber, for draining plasma from the associated



chamber after the plasma has been separated by centrifugal force, said ports being spaced radially inward from the wall of the centrifuge by a predetermined distance representing the location of the plasma after its separation.

4,332,352

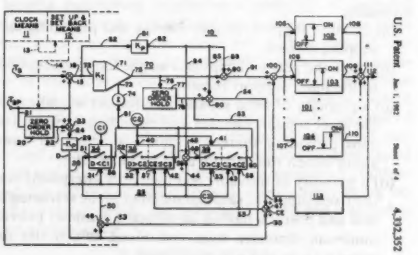
MULTISTAGE THERMOSTAT USING INTEGRAL INITIATION CHANGE MEANS

Thomas S. Jaeger, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 30, 1981, Ser. No. 229,690

Int. Cl.³ G05D *23/12;* F23N *5/20;* F25B *29/00*

U.S. Cl. 236—1 E **10 Claims**



1. A multistage thermostat adapted to operate a heating plant having primary heating means and secondary heating means, including: temperature sensing means having an output signal responsive to an ambient temperature to be controlled by the operation of said heating plant; variable temperature setpoint means having an output signal to set said thermostat to control said ambient temperature by the operation of said heating plant; clock means to provide a continuous series of timed intervals; first summing means having inputs connected to receive said sensing means signal and to receive said setpoint means signal with said summing means including output means having a signal representative of a current temperature error; previous temperature setpoint means having an output signal equal to said setpoint output signal at an interval of time prior to a current interval of time; second summing means having inputs connected to receive said two setpoint output signals to provide a difference output signal from said two setpoint means for each successive interval of time; signal processing means including integrator means being initiated with a stored integral value and having an integral reset output means, and further having previous integral reset output means; said signal processing means further including proportional constant means having an output proportional to its input; said signal processing means having an input connected to said first summing means to receive said current temperature error signal; said signal processing means having output means providing a continuous composite error signal, a previous integral reset output signal, and a current error output signal; comparator means having input means connected to compare said output signals from said second summing means, said previous integral reset output means, and said current error output signal from said signal processing means; said comparator means having output means connected to said integrator means to reinitiate the stored integral value of said integrator means upon said comparator means measuring a predetermined level of change between said temperature setpoint output signal and said temperature sensing means output signal; and multistage cycler means having input and output means; said multistage cycler input means connected to receive said continuous composite error signal; said cycler output means adapted to be connected to said heating plant and having a staged output signal responsive to said continuous composite error signal from said signal processing means to progressively stage said primary heating means and said secondary heating means of said heating plant.

4,332,353

PROCEDURE FOR MECHANICALLY RAISING THE WOOD CONTENT IN WOOD CHIPS

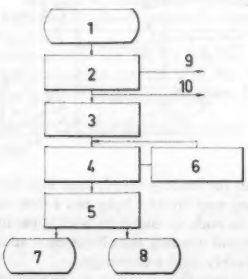
Heikki Lario, Lahti, and Matti Haimila, Kartano, both of Finland, assignors to Kone Osakeyhito, Helsinki, Finland

Filed Dec. 20, 1979, Ser. No. 105,542

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856020

Int. Cl.³ B02C *17/00*

U.S. Cl. 241—14 **3 Claims**



1. An improved process for mechanically raising wood content of wood chips in a dry state, including the steps of: initially screening dry wood material in a disk sieve for removing oversize bodies therefrom; introducing said material into a grinder drum having grinder bodies, such as balls; rotating said drum with said dry wood material to thereby detach bark and green matter therefrom to yield dry wood chips; comminuting said bark and green matter; screening of said dry chips by thickness sorting; directing excessively thick chips to a disk chopper for crushing and subsequent thickness sorting; directing dry chips passing through said subsequent thickness sorting to a separation sifter; and further separating said dry chips from said bark and green matter by additional screening.

4,332,354
PROCESS FOR PREPARING TRANSPARENT IRON OXIDE PIGMENT DISPERSIONS

Francis G. deMonterey, Hopkins; Bharat J. Adhia, and David M. Johnson, both of Holland, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1981, Ser. No. 221,969
Int. Cl.³ B02C *17/14;* **C03C** *3/00, 3/08, 3/10*
U.S. Cl. 241—16 **10 Claims**

1. A process for preparing transparent iron oxide dispersions comprising

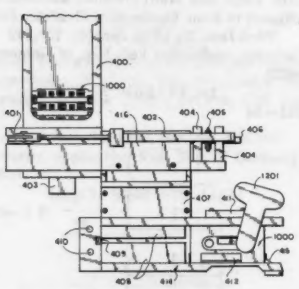
milling a mixture of iron oxide pigment and liquid vehicle in a bead mill containing glass beads having a diameter of 0.1 millimeter to 2.0 millimeters, and a density of 2.50 to 4.00 g/cc, wherein said glass beads consist essentially of

A. 58 percent to 70 percent by weight of SiO_2,
B. 0 percent to 25 percent by weight of PbO,
C. 5 percent to 9 percent by weight of K_2O,
D. 4 percent to 11 percent by weight of Na_2O,
E. 2 percent to 3 percent by weight of B_2O_3,
F. 0 percent to 5 percent by weight of BaO,
G. 0 percent to 5 percent by weight of CaO,
H. 0 percent to 2 percent by weight of Al_2O_3, and
I. 0 percent to 2 percent by weight of trace elements.

4,332,355
METHOD AND APPARATUS FOR AUTOMATICALLY LOADING TAPE CARTRIDGES WITH SUPPLY TAPE

Rainer K. Zopfy, Ronkonkoma; Robert F. Nolan, Manorville, and Carl J. Stapf, Shirley, all of N.Y., assignors to Raikon Research Corporation, Ronkonkoma, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,318
Int. Cl.³ B65H *19/20, 19/16*
U.S. Cl. 242—56 R **25 Claims**



1. Apparatus for loading supply tape into tape cartridges of the type having two internal hubs and a tape member initially connected at its ends to said hubs, said apparatus comprising:

first and second winding assemblies each adapted to receive and releasably hold a cartridge;

a cartridge positioning assembly for receiving cartridges fed thereto from a cartridge supply, said positioning assembly comprising a support seat for said cartridge, means for selectively aligning said cartridge with said first or second winding assembly and means for positioning a cartridge into said first or second winding assembly;

tape support means adapted to support and selectively align the tape member of a cartridge positioned in either of said first or second winding assemblies with said supply tape;

extractor means for extracting a portion of the respective tape members from the cartridges positioned in either of said first or second winding assemblies and positioning said extracted portion on said tape support means;

cutting means for cutting the supply tape and the respectively extracted tape members supported and aligned on said tape support means;

splicing means for joining aligned ends of said supply tape and at least one of said extracted tape members;

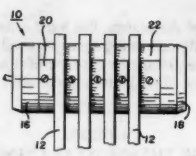
drive means for rotating the hub of at least one of the cartridges positioned in said first or second winding assembly to wind said supply tape thereon; and

means for removing a loaded cartridge from its respective winding assembly.

4,332,356
CHUCK FOR SIMULTANEOUSLY WINDING A PLURALITY OF NARROW PRODUCT STRIPS ON CORES

Lawrence R. Damour, 16 Chesler Sq., Succasunna, N.J. 07876

Filed Feb. 23, 1981, Ser. No. 236,673
Int. Cl.³ B65H *75/18*
U.S. Cl. 242—72 B **15 Claims**



1. A chuck for winding strip material of narrow width on narrow cores carried and rotated by said chuck with the build-up of said strip windings on the core accommodated by slip provided by the chuck, said chuck being expanded locally by pressurized air or fluid means, the assembly of this chuck including:

(a) an inner support member having and providing an outer support surface;

(b) front and rear end caps and means for retaining said caps to the inner support member;

(c) a plurality of fixed separators adjacent to and carried by the inner support member and extending between said end caps providing thereby a minimum diameter over and along which the narrow cores may be slid;

(d) a plurality of movable leaf members interposed between the fixed supports, said leaf member in the retracted condition and position having an outward diameter providing a minimum diameter over and along which the narrow cores may be slid and positioned;

(e) a plurality of grooves of determined width and depth formed in the movable leaf member, and when said leaf members are moved to an outward condition each groove provides restraining shoulders sufficient to prevent unwanted movement of a narrow core along the chuck;

(f) cooperative means formed on the fixed separators and the movable leaf members to limit the outward movement of said movable leaf members;

(g) a plurality of tube retaining grooves formed in the inner support member with at least one groove disposed below each movable leaf member and positioned adjacent and outwardly from the groove formed in the movable leaf member;

(h) a resilient tube carried in each retaining groove, said resilient tube adapted for expansion to determined limits by an input of pressurized air or fluid;

(i) a plurality of saddle members carried in each tube retaining groove and movable outwardly and inwardly with the expansion and contraction of said tube;

(j) at least one drive member carried by each saddle member and movable with said saddle member so as to move the drive member into engagement with the inner diameter of a narrow core;

(k) spacing means to provide guide segments carried by each movable leaf member and to provide retaining guides for the saddle members, and

(l) inlet means providing a conductor for carrying pressurized air or fluid to and from the resilient tubes, whereby the pressurized air or fluid is fed to said resilient tube so that the movable leaf members and drive members carried therewith are moved outwardly to provide restraining shoulders and drive means for each narrow core, reduction and release of the pressure on said resilient tube allows the leaf members and drive members to move to a condition and position whereat each narrow core may be removed from the chuck and replaced.

4,332,357

STRIP FEEDING

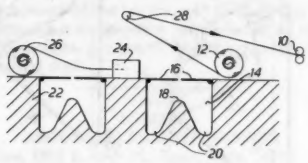
David A. Armstrong, Swansea, Wales, assignor to British Steel Corporation, England

Filed Aug. 25, 1980, Ser. No. 180,620

Claims priority, application United Kingdom, Aug. 21, 1979, 7929076

Int. Cl.[3] **B21C** *47/02;* **B65H** *19/08, 19/18*

U.S. Cl. 242—78.1 **10 Claims**



1. A method for producing continuous feed of strip from finite lengths comprising producing a plurality of coils by winding each strip on to a mandrel having at least two portions separated by a gap between which the strip is located and completing a series of cycles, each cycle comprising unwinding one of said coils to feed the head thereof into apparatus requiring said continuous feed and to feed the tail-end thereof to a fixed station whilst storing the balance of the tail end of said coil in a first accumulator, and unwinding another of said coils to feed the head thereof to the fixed station for attachment to the tail end of said one coil whereby to maintain a continuous feed; the tail end of said other coil subsequently being fed to said fixed station whilst the balance of its tail end is stored in a second accumulator.

4,332,358

SPIN CASTING TYPE FISHING REEL WITH IMPROVED DUAL CRANK BEARING RETENTION MEANS

Henry L. Neufeld, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

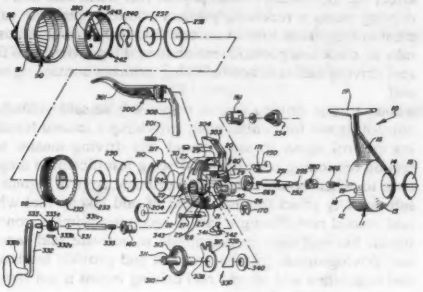
Filed Dec. 22, 1980, Ser. No. 218,925

Int. Cl.[3] **A01K** *89/01*

U.S. Cl. 242—84.2 A **5 Claims**

1. In a spin casting style fishing reel (**10**) of the type which has a cylindrical reel body (**20**) with a transverse deck plate (**21**) and circumferential forward (**22**) and rearward (**23**) body portions which extend, respectively, fore and aft of said deck plate (**21**) and have external (**23***a*) and internal (**23***b*) surfaces, a pair of integral, hollow bosses (**39** and **40**) at opposite sides of the rearward reel body portion (**23**), said bosses being axially aligned with one another and having respective outer projections (**41** and **42**) extending outwardly of said external surface (**23***a*) and respective inner projections (**43** and **44**) extending inwardly of said internal surface (**23***b*), a crank bearing sleeve means (**160** and **161**) in each of said hollow bosses (**39** and **40**), each of said sleeve means being axially slidably mounted in a boss, gear crank assembly means (**310**) journalled in the crank bearing sleeve means (**160** and **161**), a back housing (**11**) for said reel which has a cylindrical cover (**12**) mating with the periphery of the rearward circumferential body portion (**23**), and means (**27**) detachably securing said back housing (**11**) to said cylindrical body (**20**), the improvement comprising, in combination:

transversely extending interengaging means (**45, 46** and **164**) on each of said hollow bosses (**39** and **40**) and crank bearing sleeve means (**160** and **161**) which fix the rotational orientation of the bearing sleeve means (**160** and **161**) in the bosses, and abutting surfaces (**46, 47** and **165**) on said bosses and said sleeve means which limit inward movement of said sleeve means in said bosses;



an inwardly facing surface (**51** or **52**) on a rearward part of each hollow boss (**39** or **40**) and an outwardly facing surface (**167**) on a rearward part of each sleeve means (**160** or **161**), each of said inwardly (**51** or **52**) and outwardly (**167**) facing surfaces forming the outer and inner sides, respectively, of a rearwardly open recess;

and a forwardly projecting means (**19**) at each side of the back housing (**11**), each said forwardly projecting means (**19**) extending into one of said recesses to restrict lateral outward movement of one of the crank bearing sleeve means (**160** or **161**).

4,332,359

TENSIONING MEANS FOR REEL-TO-REEL TAPE TRANSPORTS

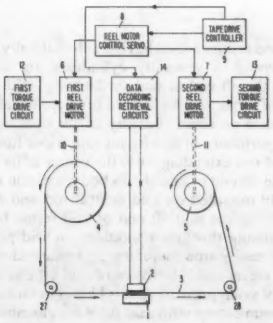
Eugenio Berti, Falkland, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 91,440, Nov. 5, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 223,961

Claims priority, application United Kingdom, Nov. 28, 1978, 46352/78

Int. Cl.[3] **G03B** *1/04;* **G11B** *15/32*

U.S. Cl. 242—203 **4 Claims**



1. A reel-to-reel tape drive system for driving payout and takeup reels comprising:

first and second reel driving means mechanically coupled to

said payout and takeup reels respectively for driving said payout and takeup reels;

a reel driving means control circuit for applying primary control signals to said first and second reel driving means and for generating secondary control signals;

a first torque driving circuit responsive to said secondary control signals for continuously providing a first tensioning control signal to said first reel driving means, said first tensioning control signal being insufficient in magnitude when compared to said primary control signals to substantially affect the movement of said payout reel when said first reel driving means is receiving primary control signals but sufficient in magnitude to activate said first reel driving means to take up slack and provide tension in said tape when said first reel driving means is not receiving primary control signals; and

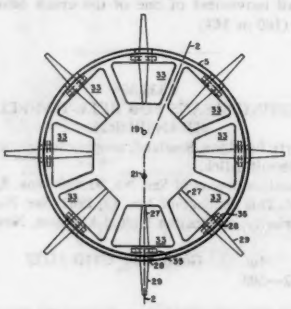
a second torque driving circuit responsive to said secondary control signals for continuously providing a second tensioning control signal to said second reel driving means, said second tensioning control signal being insufficient in magnitude to when compared to said primary control signals to substantially affect the movement of said takeup reel when said second reel driving means is receiving primary control signals but sufficient in magnitude to activate said second reel driving means to take up slack and provide tension in said tape when said second reel driving means is not receiving primary control signals.

4,332,360

AUTOMATICALLY DEPLOYED SHELL FINS

Roger O. Topliffe, Amherst, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 21, 1980, Ser. No. 170,341
Int. Cl.³ F42B *13/32*
U.S. Cl. 244—3.27 **5 Claims**



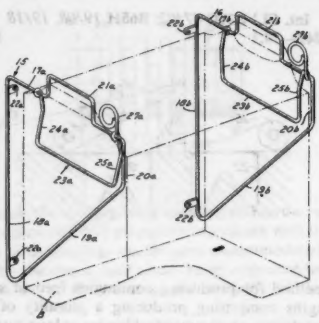
1. A guided artillery shell having automatically deployed tail fins, comprising, a generally cylindrical fin support frame attached to the aft end of said shell's body, said frame having a plurality of large, equally spaced pressure equalizing ports in its aft end and an equal plurality of fin slots equally spaced around the periphery of said frame, said frame further comprising a central rod extending from the center of its aft end to the center of the aft end of said shell's body, a piston with a central hole slidably mounted on said central rod and held, prior to muzzle exit, against said aft end of said frame by means of a shear pin passing through a shoulder on said piston and said central rod, said piston including a pressure chamber formed by a recess therein and the inside of said aft end of said frame, a plurality of small pressure control holes in said aft end of said frame communicating with said pressure chamber, a set of tail fins pivoted near one edge of their inboard ends on pins mounted in said frame, the opposite edge of said inboard ends of said fins having a projection thereon which, prior to muzzle exit, is latched under a flange on the outside of said piston, the fins completely stowed inside said frame prior to launch, whereby upon firing of said shell, the gun chamber gases will pressurize said piston pressure chamber through said pressure control holes and upon muzzle exit the pressure therein will force the piston forward, breaking said shear pin and unlatching said stowed tail fins which will then pivot around said pins to the deployed position, passing through said fin slots, with the projections thereon stopping against the forward edge of said fin slots.

4,332,361

BAG HOLDER SUPPORT SYSTEM

Thomas A. McClellan, 8888 Riverside Dr. East, Windsor, Ontario, Canada (N8S 1H2)

Filed Dec. 31, 1980, Ser. No. 221,535
Int. Cl.³ B65B *67/12*
U.S. Cl. 248—95 **15 Claims**



1. A bag holder support system for a bag having spaced oppositely extending walls with a handle portion formed by an opening in the walls comprising

a pair of brackets,

said brackets being adapted to be mounted on a wall, door or the like,

each bracket having a horizontal portion with a central upwardly extending portion for receiving the handle opening of one side of a bag,

said horizontal portion of each bracket extending horizontally away from the upwardly extending portion of each bracket thereby suspending one wall of the bag,

and bag holding means on each said bracket movable into position after a bag is suspended on the bracket to hold the wall of the bag in position and maintain the wall so that the bag is held open,

means for locking said bag holding means in bag holding position,

said bag holding means comprising a second bracket,

said locking means comprising a portion of said second bracket cooperating with the upstanding portion of the first mentioned bracket.

4,332,362

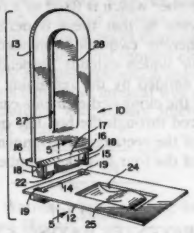
TELEPHONE NOTE CLIP

Norbert Leopold, Chicago, Ill., assignor to The Cloverline Inc., Chicago, Ill.

Filed Mar. 10, 1980, Ser. No. 128,734
Int. Cl.³ G09F *3/00*; A44B *21/00*
U.S. Cl. 248—226.5 **2 Claims**

1. A telephone note clip comprised of a base portion and an upright portion, said base portion having a fastening device for removably securing the note clip to a telephone set, said upright portion having a note retaining member on a face thereof directed toward the telephone, said fastening device and said retaining member being integral with said base portion and

upright portion respectively, said base portion and said upright portion being made from a molded plastic material and comprise separately molded parts, said separately molded parts being secured together by a snap-fit, said snap-fit including an open slot in one of the parts and a tongue on the other part



entered into said slot, and oppositly projecting edges on the tongue in opposed relation to opposite edges of the slot to prevent withdrawal of the tongue, said tongue being provided with vertical end walls disposed perpendicular to the tongue and said slot includes end portions correspondingly shaped to receive said end walls.

4,332,363

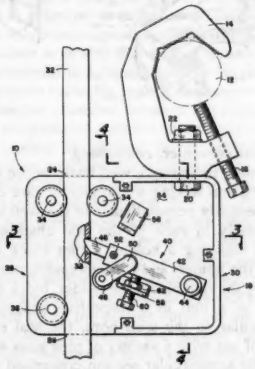
ADJUSTABLE LIGHT HANGER

Don E. Ware, 4963 E. 26th Pl., Tulsa, Okla. 74114

Filed Feb. 4, 1980, Ser. No. 118,542

Int. Cl.[3] F16L *3/12*; F21S *1/02*

U.S. Cl. 248—321 **6 Claims**



1. An adjustable support device for appliances comprising a housing having a first and second side and with top and bottom aligned openings therethrough, said housing having clamp means for removable attachment to a support member; an elongated support means having a first and second side passing through said openings in said housing, said elongated support means having a plurality of aligned openings therein on a first side thereof; a plurality of opposed rollers mounted within said housing adjacent said top openings therein, one of said rollers being in contact with said first side of said elongated support means and a second of said rollers being in contact with said second side of said elongated support means; a lower roller mounted within said housing below said second of said rollers and adjacent said bottom opening therein and being in contact with said second side of said elongated support means; locking means pivotally mounted within said housing and co-operable with said openings in said elongated support means, said locking means having a guide means extending therefrom and in contact with said first side of said support means whereby when said elongated support means is in the aligned vertical position said locking means permits upward vertical movement and prevents downward vertical movement and when said elongated support means being canted from the vertical position towards said locking means, said guide means displaces said locking means to allow upward and downward vertical movement.

4,332,364

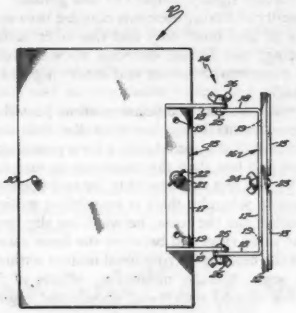
EASEL

Gerald S. Beskin, Minneapolis, Minn., assignor to Therapac Div., Krelitz Industries, Inc., Minneapolis, Minn.

Filed Jan. 7, 1980, Ser. No. 109,836

Int. Cl.[3] B41J *11/02*

U.S. Cl. 248—442.2 **6 Claims**



1. In an easel of the type having generally planar material prop means and means supporting said prop means at an attitude, the improvement wherein said supporting means comprises plate means adapted to be affixed to a surface and hinge means formed of first and second members each having a base and extending legs, the base of said first and second members being secured to a different one of said prop means and plate means by means for allowing a selective relative rotational movement between said member bases and said prop means and plate means about axes generally perpendicular to the associated one of said prop means and plate means, said legs being secured to each other by means for allowing a selective relative pivoting movement of said first and second members about an axis spaced from said bases, said selective relative movements providing prop means attitude reorientation.

4,332,365

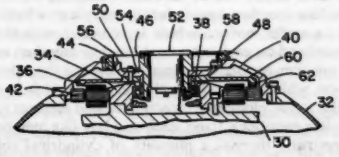
FLEXURE MOUNTED GIMBAL SUPPORT ASSEMBLY

Edmund C. Berk, Danvers, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 12, 1979, Ser. No. 84,274

Int. Cl.[3] G01C *19/18*

U.S. Cl. 248—544 **5 Claims**



1. In a gimbal support system of the type including a stable

platform for holding inertial components, a torque motor for providing driving torque between the gimbals, the rotor of the torque motor fixed relative to the stable platform and energized by brushes which are not fixed relative to said platform, and a slip ring assembly for enabling external electrical connection to said brushes and inertial components, the improvement being apparatus for rotatably coupling said stable platform to said gimbal, said apparatus minimizing the effects of friction on rotating parts, which comprises:

(a) an antifriction ball bearing having an inner race and an outer race, the outer race of said bearing being rigidly coupled to the inner surface of said rotor and said stable platform;

(b) an inner ring having its outer surface rigidly coupled to the inner race of said bearing and to said brushes, the aperture of said inner ring being adapted for rotatably supporting said slip ring assembly therein;

(c) an outer ring concentric with said inner ring having its outer surface rigidly coupled to said gimbal;

(d) a plurality of flexure elements coupled between the outer surface of said inner ring and the inner surface of said outer ring, said flexure elements allowing relative rotational movement between said inner ring and said outer ring; and

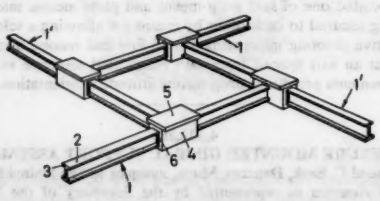
(e) the resistance to rotational motion provided by said flexure elements being less than the resistance to said motion provided by said bearing for a preselected angle of rotation and less than the resistance to said motion provided by said slip ring assembly for said preselected angle of rotation, whereby there is no relative motion between the brushes and the rotor, between the slip ring assembly and the inner ring, and between the inner race and outer race of the bearing for rotational motion within the preselected angle, thereby minimizing effects of friction for rotational motion within said preselected angle.

4,332,366

ADJUSTABLE QUADRANGULAR BASE FOR FRAMEWORK ASSEMBLING MACHINES

Buenaventura Descals Munt, Estacion St. 6, Sallent (Barcelona), Spain

Filed Apr. 2, 1980, Ser. No. 136,626
Claims priority, application Spain, Apr. 2, 1979, 479.998
Int. Cl.³ F16M *7/00*
U.S. Cl. 248—670 **2 Claims**



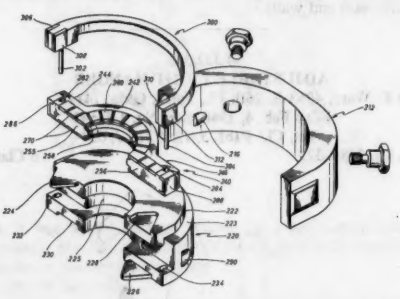
1. Improvements in an adjustable quadrangular base, such as for a framework assembling machine, comprising a group of four rigid elongated elements each having finished planar surfaces on the upper and lateral sides thereof, a rigid box-like member fixed to one end of each said elongated element, each said box-like member having an upper plate which defines thereon an upper surface which is coplanar with the upper surfaces defined on each other said box-like member, each said boxlike member having an opening extending therethrough in a direction which is parallel with said upper surface and perpendicular to the elongated direction of said element to which said box-like member is fixed, each said box-like member rotatably supporting thereon a plurality of cylindrical rollers including a pair of horizontally disposed rollers positioned adjacent the upper and lower sides of the opening for rollingly supportingly engaging the upper and lower sides of a said elongated element, said plurality of cylindrical rollers also including a pair of vertically disposed rollers positioned adjacent the opposite sides of the opening for rollingly supportingly engaging the opposite lateral sides of said latter elongated element, each said elongated element being rollingly and longitudinally movably supported within and projecting through a said box-like member which is fixed to a remaining one of the elongated elements so that there is defined a quadrangular arrangement whereby two said elongated elements define a first parallel pair which extends perpendicular to a second parallel pair as defined by the remaining two elongated elements, whereby the elongated elements can be movably longitudinally displaced through the box-like members to vary the size and shape of the rectangular arrangement defined by the upper surfaces of the four box-like members.

4,332,367

BLOWOUT PREVENTER HAVING A VARIABLE RAM SEAL

Norman A. Nelson, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed May 2, 1980, Ser. No. 146,077
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 A **12 Claims**



1. A blowout preventer, comprising:

a body member including a well bore for the reception of a drill string and having a plurality of ram chambers in a plane essentially perpendicular to the well bore;

a ram assembly in each of the ram chambers, each ram assembly includng a holder, a ram block releasably secured to the holder, and a compressible ram seal element carried by the ram block, the holder, block and seal being movable as a unit in a respective chamber essentially perpendicular to the well bore, the seal element being capable of use with a variety of pipe sizes and including:

an essentially semicircular section comprised of a resilient, compressible material and including an inward radial projection to seal against a pipe, a plurality of rigid support elements each of which includes a pair of essentially parallel support sections that are positioned on opposed sides of the semicircular section and that are interconnected by an integral web embedded in the compressible material, the web being essentially rectangular in cross section so that it includes a pair of major axis, the support elements being arranged such that the parallel sections and one of the axes of the interconnected integral webs of all the support elements are positioned essentially on a radius with respect to the axis of the semicircular section in their normal uncompressed position and such that the support section of each support element is spaced from the next adjacent support element by a distance sufficient to accommodate compression of the semicircular section, so that the resilient compressible material and the support elements move essentially radially upon the application of radial inward compressible forces, in order to seal around

various sized pipes, whereupon during the essentially radial movement of the support elements the parallel sections and integral webs essentially maintain their position on a radius, and

radial flange sections extending outwardly from diametrically opposed positions on the semicircular section, each flange section being integral with the essentially semicircular section and including at least one rigid support element in addition to the support elements of the semicircular section, which additional support element includes a pair of essentially parallel sections on opposed sides of the flange and which include an integral web embedded in the compressible material and rigidly interconnected with both the parallel sections.

4,332,368

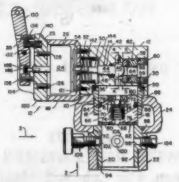
VALVE

Orest Woloszczuk, Warren, Mich., assignor to Crown Systems Company, Madison Heights, Mich.

Filed Aug. 21, 1978, Ser. No. 935,352

Int. Cl.³ F16K *31/02*

U.S. Cl. 251—30 **16 Claims**



1. Valve structure comprising a valve body, a pilot valve within the valve body, a poppet valve having an axis along which it operates positioned exterior of and operably associated with the valve body and pilot valve for actuation along its axis in response to actuation of the pilot valve and having check valve means positioned axially therein through which a container to which the valve structure is secured is filled with a material in a direction from the pilot valve and through the poppet valve for sealing the poppet valve means forming a pressure chamber between the poppet valve and pilot valve in conjunction with the valve body to receive said material for sealing the poppet valve, separate means for securing the valve structure to a container to be evacuated on actuation of the poppet valve including a valve seat for receiving the poppet valve to seal the container, a poppet valve guide sleeve mounted between the poppet valve and valve body for slight pivotal movement about one end relative to the valve body receiving the poppet valve and guiding its movement between the separate means for securing the valve structure to the container and the valve body to ensure proper seating of the poppet valve on the valve seat, a separate manifold surrounding the poppet valve receiving the sleeve in one end thereof at the valve body and receiving the securing means in the other end thereof through which material from the container is discharged on opening of the poppet valve by opening the pilot valve and expelling the material in said pressure chamber through said pilot valve, means securing the separate valve body, guide sleeve, poppet valve, securing means and manifold together and means for actuating the pilot valve operably associated with the pilot valve.

4,332,369

ADJUSTABLE IN-LINE INTRAVENOUS VALVE WITH LOCKING MECHANISM

Marvin Gordon, East Windsor, and Joseph Lichtenstein, Colonia, both of N.J., assignors to Whitman Medical Corporation, Clark, N.J.

Filed Jul. 14, 1980, Ser. No. 168,722

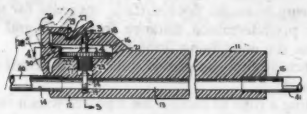
Int. Cl.³ F16K *35/02*

U.S. Cl. 251—114 **8 Claims**

1. A valve for controlling fluid flow through intravenous supply tubing, comprising:

a body member having a horizontal passage extending therethrough and means for connecting said passage in series with said intravenous tubing said body member including a first mating element;

selectively movable valving means, including a valve member disposed in said passage, for adjustably blocking flow through said passage by moving said member within said passage, said valving means including a movable actuator for said valve member at least partially received within said body member, and means securing said actuator to said body member; and



locking means formed as an integral part of said body member, separate from said actuator and selectively pivotable independently of said actuator between open and closed positions, said locking means including a bearing surface which in said closed position bears against said actuator to prevent inadvertent movement of said valve member, said locking means in said open position being out of contact with said actuator to permit movement of said valve member said locking means further including a second mating element which engages said first mating element in said closed position.

4,332,370

FLUID FLOW CONTROL VALVE, PRINCIPALLY OF THE BALL OR PLUG TYPE

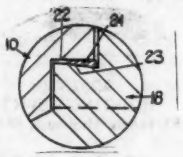
William F. Williams, Newport, England, assignor to Serck Industries, Limited, Birmingham, England

Filed Jul. 24, 1980, Ser. No. 172,022

Claims priority, application United Kingdom, Aug. 10, 1979, 7927912

Int. Cl.³ F16K *31/44*

U.S. Cl. 251—214 **9 Claims**



1. A firesafe fluid control valve comprising a body made of firesafe material and having both a fluid passage therethrough and a stepped opening therein, a valve member mounted in said body for movement between a first position in which said valve member permits fluid flow through the fluid passage and a second position in which said valve member prevents fluid flow through the fluid passage, a stem made of firesafe material connected to said valve member and rotatably extending through said stepped opening in said body for rotation about a rotation axis, means on said body for defining a first shoulder facing the fluid passage, said defining means comprising said stepped opening, means on said stem for defining a second shoulder facing said first shoulder, said second shoulder including an outer periphery, and sealing means interposed between said first and second shoulders, said first shoulder having an outer periphery, said first and second shoulders normally being spaced apart by said sealing means, said first shoulder comprising means spaced inwardly from said first shoulder outer periphery for contacting said second shoulder only at said outer periphery of said second shoulder upon failure of said sealing means.

4,332,371

CARPET REMOVING APPARATUS AND METHOD

Dwain C. Bell, 1400 Marshall St., NE., Minneapolis, Minn. 55413, and Lloyd E. Anderson, 6408 - 74th Ave. North, Minneapolis, Minn. 55428

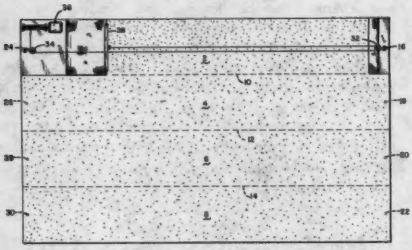
Filed Oct. 6, 1980, Ser. No. 194,597
Int. Cl.[3] B66D *1/00*
U.S. Cl. 254—203 2 Claims

1. A method of stripping a floor covering from a floor surface to which said floor covering had been adhesively bonded, comprising the steps of:

(a) loosening opposing first and second edges of said floor covering from the floor surface inwardly for a relatively short predetermined distance from each end thereof to expose the underlying floor surface;

(b) anchoring first and second pulleys to the floor surfaces so exposed;

(c) routing a rope or cable from a power winch through said first pulley, across the floor covering to be removed,



through said second pulley and back to said first edge of said floor covering proximate said first pulley;

(d) clamping said first edge of said floor covering proximate said first pulley along a predetermined width thereof in an elongated clamping means;

(e) fastening said cable or rope to said clamping means; and

(f) energizing said power driven winch to apply a pulling force to said first edge of said floor covering to thereby peel the floor covering from said floor surface in a direction away from said first pulley until said clamping means is proximte said second pulley.

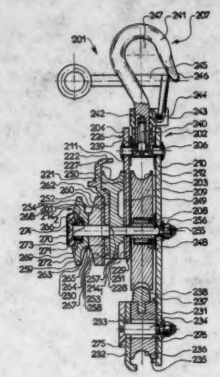
4,332,372

HOISTING DEVICE

Edouard Singer, 53, rue de Mulhouse, 68790 Morschwiller-Le-Bas, France

Continuation-in-part of Ser. No. 927,364, Jul. 24, 1978, Pat. No. 4,264,056. This application Feb. 18, 1981, Ser. No. 235,552
Claims priority, application France, Jul. 27, 1977, 77 2369o
Int. Cl.[3] B66D *3/04*
U.S. Cl. 254—391 10 Claims

1. A hoisting device, in particular a block, comprising a case having spaced first and second sides, means at the top of said case for suspending said case from a support, a shaft extending between said sides of said case and projecting beyond said first side thereof, a rotatable sheave disposed between said sides of said case and rotatably supported by said shaft, a first non-rotatable sheave fixed on said shaft against an outer face of said first side of said case, a second non-rotatable sheave fixed on said shaft against an outer face of said first non-rotatable sheave, a brake shoe mounted for vertical movement on an inner face of said second side of said case below said rotatable sheave, said brake shoe having on its lower face a rope-receiving groove and having on its upper face a convex portion for engagement with the groove of said rotatable sheave, said brake shoe being movable between an upper position in which it engages said rotatable sheave and a lower position in which it is disengaged from said rotatable sheave, and a rope which in hoisting condition passes over said rotatable sheave, in lowering condition passes from said rotatable sheave down under said brake shoe, then up over said first non-rotatable sheave and in locked



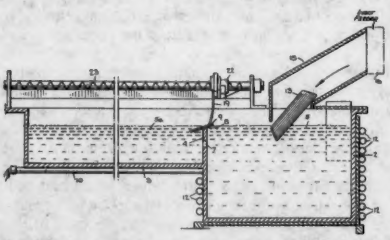
condition further passes around said second non-rotatable sheave.

4,332,373

SOLDER POT WITH REPLENISHER AND SKIMMER

Robert D. Huppunen, Cos Cob, and Theodore J. Morin, New Canaan, both of Conn., assignors to Thermatool Corp., Stamford, Conn.

Filed May 14, 1980, Ser. No. 149,767
Int. Cl.[3] C21B *3/04*
U.S. Cl. 266—228 21 Claims



1. Molten metal bath apparatus comprising:

a tank comprising a first section for molten metal and a second section for molten metal separated from said first section by a wall common to the first section and the second section and extending to the bottom of each section, said wall having an upper end and having at least one opening therein, the area of the opening or openings being small compared to the area of said wall so as to restrict the flow of heat between said first section and said second section but having a size which permits the flow of molten metal therethrough from said second section to said first section, whereby the temperature of the metal in said first section may differ from the temperature of the metal in said second section, said opening or openings being spaced from and below said upper end and being above the bottom of each section to provide a portion of said wall below the opening or openings which prevents the flow of molten metal between said first section and said second section except at the opening or openings and above said wall, whereby said first section and said second section may be filled with molten metal to a level above the opening or openings and below said upper end;

first heating means for heating metal in said first section to at least its melting temperature and including means for maintaining the temperature thereof substantially at a predetermined temperature; and

second heating means for heating metal in said second section to at least its melting temperature, said second heating means being operable independently of the level of molten metal in said first section and separately from said first heating means to permit rapid melting of solid metal inserted in said second section without increasing the heating by said first heating means.

4,332,374

PROFILOMETER MOUNTING TECHNIQUE AND APPARATUS

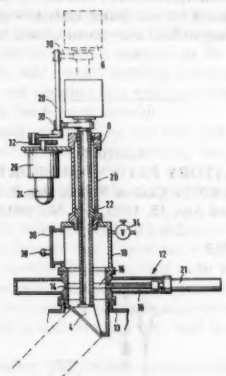
Victor Kremer, Luxembourg, Luxembourg, assignor to Paul Wurth S.A., Luxembourg

Filed Dec. 5, 1979, Ser. No. 100,499

Claims priority, application Luxembourg, Apr. 13, 1979, 81158

Int. Cl.³ C21B *7/24*

U.S. Cl. 266—99 **13 Claims**



1. Apparatus for measuring the profile of the material deposited on the hearth of a pressurized shaft furnace, the furnace having a wall which is provided with an aperture therethrough, said apparatus comprising:

signal emitter means, said signal emitter means including the antenna means for directing a beam of radiant energy toward the furnace hearth;

housing means, said housing means defining an internal chamber of sufficient volumn and shape to accomodate said signal emitter means antenna means, said housing means having an opening through one side thereof and being mounted on the exterior of the furnace wall with the said opening therein in registration with the furnace wall aperture;

a moveable elongated tubular support member, said support member having an axis and extending into said internal chamber through a second side of said housing means, said signal emitter means antenna means being mounted on said support member for movement therewith;

means for imparting longitudinal movement along said axis to said support member whereby said antenna means may selectively be retracted into said housing means or extended out of said housing means through said opening to enable the beam of radiant energy to be directed to and reflected from the material on the furnace hearth;

means for imparting oscillatory motion about said axis to said support member to cause the beam of radiant energy to be scanned; and

valve means cooperating with said housing means opening to hermetically seal the interior of said housing from the interior of the furnace when said antenna means is in the retracted position.

4,332,375

COPY SHEET-FEEDING APPARATUS

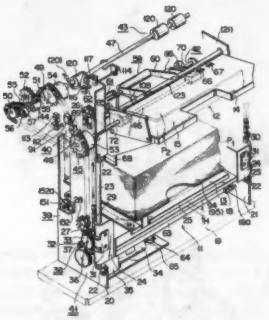
Shuzo Tsubo, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 1, 1980, Ser. No. 145,878

Claims priority, application Japan, May 10, 1979, 54-57406; May 10, 1979, 54-57407; May 10, 1979, 54-57408; May 10, 1979, 54-57411; May 10, 1979, 54-57412; May 10, 1979, 54-57416

Int. Cl.³ B65H *1/04, 1/12, 1/14, 3/44*

U.S. Cl. 271—9 **6 Claims**



1. A sheet feeding apparatus comprising:

first sheet-holding means having a sheet rest for supporting a stack of sheets which sheet rest is movable up and down between a sheet replenishing position and a sheet supply position;

second sheet-holding means having a cassette for supporting a stack of sheets and which is movable between a sheet replenishing position and a sheet supply position;

a sheet cover movable between a closed position at which it covers both the first and second sheet-holding means and an open position at which both of said first and second sheet-holding means are exposed;

a first drive mechanism for driving the first sheet-holding means between the sheet replenishing position and the sheet supply position;

a detection mechanism for detecting the open position and the closed position of the cover and for supplying to the first drive mechanism an open signal when the cover is open and a closed signal when the cover is closed, the first drive mechanism causing the sheet rest to (a) move from the sheet supply position to the sheet replenishing position in response to the open signal and (b) move from the sheet-replenishing position to the sheet supply position in response to the closed signal; and

a second drive mechanism for causing the cassette to (a) move from the sheet supply position to the sheet replenishing position in response to the movement of the sheet rest from its sheet supply position to its sheet replenishing position and (b) move from the sheet replenishing position to the sheet supply position in response to the movement of the sheet rest from its sheet replenishing position to its supply position.

4,332,376

MECHANISM FOR STACKING SEQUENTIALLY RECEIVED SHEETS

Richard L. Volpe, Hopedale, Mass., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Mar. 20, 1980, Ser. No. 132,317

Int. Cl.³ B65H *31/10, 31/20*

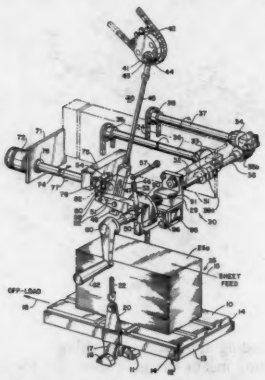
U.S. Cl. 271—217 **9 Claims**

1. A sheet stacking apparatus comprising:

a sheet-receiving table connected to a spindle means, rotation of the spindle means on its longitudinal axis causing vertical movement of the table;

reciprocating drive means for rotating the spindle means in a first direction by a predetermined amount less than a complete revolution for each reciprocation cycle of the drive means to incrementally lower the table, the drive means including a one-way ratchet-action clutch journaled on the spindle means and a reciprocating lever arm fixed to the clutch and extending radially from the axis of revolution of the spindle means, the clutch translating reciprocating movement of the lever arm into one-way incremental rotational movement of the spindle means;

means for raising the table from a lower position to a higher position; and



an adjustment mechanism for establishing the predetermined amount of incremental table lowering, the adjustment mechanism including a cam surface constituted by at least a portion of the outer periphery of at least a partially rotatable cam element and a cam follower means connected to the reciprocating drive means and continuously biased toward the cam surface, rotation of the element varying via the clutch the degree of motion transfer between the reciprocating drive means and the rotating spindle, the throw of the reciprocating drive means being generally constant.

4,332,377

COMPACT SORTER

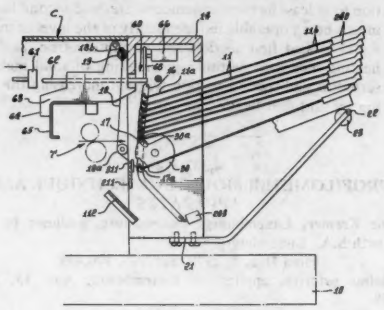
R. Clark DuBois, Fairfield, and John C. Hamma, Bridgeport, both of Conn., assignors to Gradco/Dendoki, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 98,546, Nov. 29, 1979. This application Jan. 27, 1981, Ser. No. 228,980

Int. Cl.³ B65H *39/11*

U.S. Cl. 271—293 **4 Claims**

1. In an improved sorting apparatus of the shiftable bin type including a frame structure having means for mounting the sorting apparatus on a copying machine at the sheet outlet fron the copying machine, sorting bins shiftable relative to one another to provide a wide sheet entry between bins at said outlet, and means for shifting the bins, said bins having ends remote from said outlet pivotally and longitudinally shiftably mounted one on the other and ends adjacent said outlet mounted for shifting movement past said outlet, said means for shifting said bins engaging successive bins at said ends adjacent to said outlet to move the latter successively pivotally from one side of said outlet to the other and causing relative longitudinal sliding movement of the bins, and including control means to intermittently effect operation of said shifting means following passage into successive bins from the copying machine of a selected number of sheets; the improvement wherein bearing means are provided on said ends remote from said outlet for increasing the space between said latter ends responsive to longitudinal movement of said bins in one direction and allowing movement of said latter ends towards one another responsive to longitudinal movement of said bins in the other direction.



4,332,378

AMBULATORY PATIENT SUPPORT STAND

John W. Pryor, 420 N. Cedros, Solana Beach, Calif. 92075

Filed Apr. 15, 1980, Ser. No. 140,603

Int. Cl.³ A61H *3/04*

U.S. Cl. 272—70.3 **19 Claims**

1. An ambulatory patient support stand comprising:

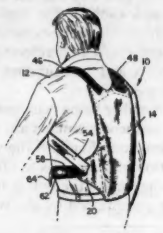
a wheeled base having a central axis and adapted to move over a supporting surface;

an elongated vertical support member extending upwardly from said base on said axis;

a push grip mounted to and radially spaced from said support member, said grip at least partially surrounding and being substantially concentric with said support member, said grip being vertically spaced from said base and being positioned intermediate the ends of said support member at approximately hip height for a person in erect position; and

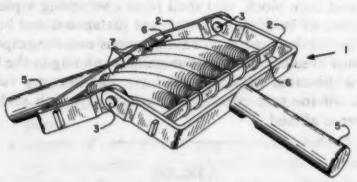
additional support means associated with and extending from said support member to removably retain external devices.

4,332,379
COLLAPSIBLE EXERCISE BACK PACK
Clifford R. Bannister, 2801 Treehouse Pkwy., Norcross, Ga. 30093
Filed Jul. 28, 1980, Ser. No. 172,814
Int. Cl.³ A63B *21/12*
U.S. Cl. 272—119 **6 Claims**



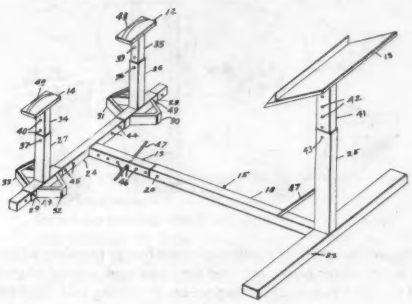
1. A collapsible physical training device to be worn by a person during physical exercise, said device comprising:
- a flexible weight carrying member defining a first compartment, said member being adapted to be worn on said person's back, said weight carrying member further defining at least one opening into said first compartment and positioned at the bottom thereof;
- means for closing said opening into said first compartment;
- means for securing said weight carrying member about the shoulders of said person;
- means for securing said weight carrying member about the waist of said person;
- a flexible weight member defining a second compartment for containing a flexible and disposable weighting material, said weight member being adapted to be received within said first compartment, said weight member further defining at least one opening into said second compartment;
- means for closing said opening into said second compartment; and
- means for dividing said second compartment into two or more communicating chambers.

4,332,380
MUSCLE BUILDING APPARATUS FOR DEVELOPING BENDING STRENGTH
Pierre J. Cardin, 3272 Top View Ct., West Linn, Oreg. 97068
Filed Oct. 3, 1980, Ser. No. 193,640
Int. Cl.³ A63B *21/02*
U.S. Cl. 272—137 **7 Claims**



1. A muscle building flexing apparatus for developing bending strength comprising:
- (a) a substantially O-shaped frame hinged at its midpoint so as to form two generally U-shaped members that face each other and are pivotally connected to one another;
- (b) each U-shaped member having a handle rigidly connected thereto and a retainer means for releasably retaining one end of at least one of a multiplicity of lengths of fairly rigid, yet resilient material; and
- (c) said handles lying generally in a common plane and along a common axis prior to flexing the ends of the resilient material toward each other.

4,332,381
EXERCISING DEVICE
Sanford D. Lyons, 2152 S. Shore Dr., Erie, Pa. 16506
Filed Oct. 12, 1979, Ser. No. 84,415
Int. Cl.³ A63B *23/02*
U.S. Cl. 272—144 **13 Claims**

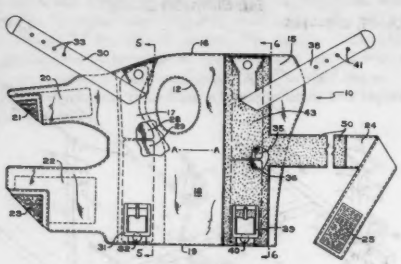


1. An exercising device comprising a main frame comprising a main bar having a first end and a second end, a first end bar having a first end and a second end and an intermediate part,
- said intermediate part of said first end bar being fixed to said second end of said first main bar, and extending laterally therefrom,
- a first post, a second post, and a third post,
- each said post having a first end and a second end, said first end of said first post being supported on said first end of said first end bar,
- said first end of said second post being supported on said second end of said first end bar,
- said first end of said third post being fixed to said first end of said main bar,
- said posts extending upwardly from above said main bar, (a platform, a first pad, and a second pad,)
- a platform, a first pad, and a second pad,
- said platform being supported on said second end of said third post,
- said first pad being supported on said second end of said first post,
- said second pad being supported on said second end of said second post,
- each of said pads has a hand engaging strap fixed to the sides thereof and extending across to receive the hands of a user between said strap and said pad,
- whereby a user may rest his hands on said pads and rest his feet on said platform and do push-ups moving his center of gravity to the shoulder blades.

4,332,382
BOWLING AID
Eugene P. Smith, 1818 Sheffield Dr., Akron, Ohio 44320
Filed Mar. 16, 1981, Ser. No. 244,204
Int. Cl.³ A63B *69/00*
U.S. Cl. 273—54 B **8 Claims**

5. A bowling aid for supporting a bowler's hand and wrist comprising: a strip member of flexible material for wrapping around the hand and wrist of a bowler; means for securing said strip member in an oval shape around the wrist and hand; said member having an upper edge extending along the upper palm and the back of the hand; said member having a lower edge extending around the wrist; said member having a thumb hole for receiving the thumb of a bowler; a first and a second rigid member aligned end to end on one side of said thumb hole

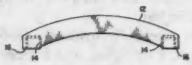
extending along said palm and wrist from said upper edge to said lower edge; a third and a fourth rigid member aligned end to end on the opposite side of said thumb hole extending from said upper edge to said lower edge; said first and said second members having a gap therebetween to allow pivoting of said first member relative to said second member; said fourth and said third member having a gap therebetween to allow pivoting of said third member relative to said fourth member; adjustable strap means overlying said first and said second aligned rigid members; adjustable strap means overlying said third and said fourth rigid members; and said adjustable strap means operative to hold said first and said second rigid members along with said third and said fourth rigid members in preselected angles.

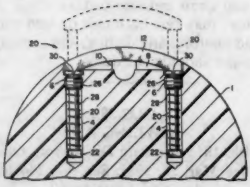


4,332,383
BOWLING BALL WITH RETRACTABLE HANDLE

Morton Milden, West Orange, and Anthony V. Falzarano, Montville, both of N.J., assignors to Maddak, Inc., Pequannock, N.J.

Filed Jan. 12, 1981, Ser. No. 224,220
Int. Cl.³ A63B *43/02*
U.S. Cl. 273—64 **6 Claims**





1. For use with a ball of the type including a pair of substantially parallel, partially threaded bores extending in spaced relation partially through the ball and connected by a recess in the ball surface having a centrally disposed widened and deepened portion, handle means for the ball, comprising:

a substantially arcuate member having a contour corresponding to that of the ball;

a pair of bushing members;

a pair of posts, each of which slides through a corresponding bushing member and terminates in a head on one of its ends;

a pair of resilient members, each of which surrounds a corresponding post between the bushing member and post head;

means associated with the ends of the posts opposite the head ends and associated with the arcuate member for removably supporting each of the posts near an end of the arcuate member substantially normal thereto;

means associated with each of the bushing members and associated with the bores for removably supporting each of the bushing members in a corresponding bore, with the corresponding posts and surrounding resilient members sliding into the bores;

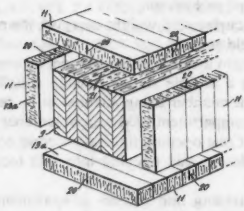
the arcuate handle member being received in the connecting recess when the resilient members are extended; and

a user inserting at least one finger in the widened and deepened central portion of the recess to lift the arcuate member therefrom, whereupon the ball is lifted and the resilient members are compressed by the weight of the ball.

4,332,384
WOODEN RACKET FRAME

Noriyoshi Hasegawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed May 23, 1979, Ser. No. 41,830
Claims priority, application Japan, May 25, 1978, 53-070625[U]; Jun. 13, 1978, 53-071096; Aug. 23, 1978, 53-102527
Int. Cl.³ A63B *49/02*
U.S. Cl. 273—73 F **22 Claims**



1. An improved wooden racket frame, comprising:

a playing face, an elongated core block extending around said playing face and comprising a plurality of thin wood layers having large side surfaces and which are combined with each other along their large side surfaces and each said wood layer being provided with grains running in the longitudinal direction of said core block, and

at least one wooden shell layer affixed to at least one surface of said core block, said shell layer comprising a plurality of distinct laminations which are juxtaposed and bonded to each other and each having grains and the respective grains of said shell layer laminations running in the thickness direction of said shell layer and thereby running toward the said core block surface to which said shell layer is affixed.

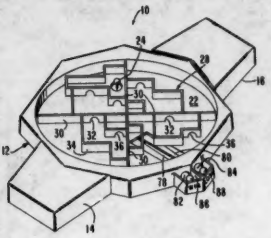
4,332,385
GAME WITH MOVEABLE MAZE ON GAME BOARD

Robert E. McCaslin, 1227 Coldwater Canyon, Beverly Hills, Calif. 90210

Filed Jan. 8, 1981, Ser. No. 223,518
Int. Cl.³ A63F *7/24, 7/38*
U.S. Cl. 273—113 **10 Claims**

1. Game apparatus comprising: a support having an upper surface over which a player piece is moveable; means above the surface for defining therewith a maze of passages for the player piece as it moves from a first location to a second location on said surface; means carried by said support for mount-

ing said maze defining means for rotation relative to said surface; means adjacent to said mounting means for rotating said maze defining means relative to said surface, said base having

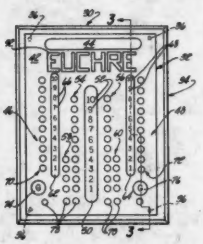


a recess in said surface at said second location for receiving said player piece after the latter has been moved from said first location by the maze defining means and as the base is handheld and manipulated.

4,332,386
EUCHRE SCORE BOARD

Richard J. Townsend, 49357 Au Lac Dr. East, Bay 8, Mt. Clemens, Mich. 48045

Filed Sep. 2, 1980, Ser. No. 183,104
Int. Cl.³ A63F *1/18*
U.S. Cl. 273—148 A **12 Claims**



1. A euchre score board comprising:

a body portion defining a substantially planar playing surface subdivided into two, discrete spaced, substantially mirror image result tabulation areas, each said tabulation area comprising:

a column of only N peg receiving holes for tabulating the number of points acquired by a playing entity in the course of a single game, where N equals the number of points required to win said single game, said holes coacting to define a first uni-directional line of progression;

a column of only ½ N−1 peg receiving holes for tabulating the number of "euchres" scored by said playing entity in the course of said game, said euchre scoring holes coacting to define a second uni-directional line of progression substantially parallel to said first line of progression;

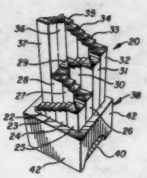
a peg associated with each said column operable for serial progression along said associated column during the course of said game; and

a column of score indicating numerals in simultaneous intermediate register with both said columns of N peg receiving holes and both said columns of ½ N−1 peg receiving holes.

4,332,387
PUZZLE COMPRISING BLOCKS WITH RABBETED ENDS

John W. Mullen, III, 5365 Montrose, Dallas, Tex. 75209

Filed Mar. 16, 1981, Ser. No. 243,992
Int. Cl.³ A63F *9/12*
U.S. Cl. 273—156 **14 Claims**



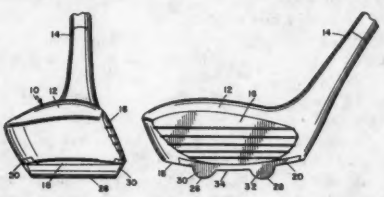
1. A puzzle comprising:

a plurality of elongated blocks, each having a rectangular cross section and a first end rabbeted along a diagonal to form two turning treads separated by a riser and a second end rabbeted to form two straight treads separated by a riser, said blocks being arrangeable in a side-by-side relation to define a desired configuration.

4,332,388
GOLF CLUB HEAD

Thomas L. Crow, La Jolla, Calif., assignor to Cobra Golf, Inc. II, San Diego, Calif.

Continuation of Ser. No. 919,424, Jun. 26, 1978, abandoned.
This application Feb. 21, 1980, Ser. No. 123,493
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—172 **3 Claims**



1. A golf club head comprising:

a wood body having a front striking face; a lower sole with a toe portion and a heel portion, and means for attachment to a shaft;

a metal sole plate fixed to said sole and having a pair of substantially semi-circular in cross section spaced parallel runners projecting downwardly therefrom and extending from front to rear across the entire sole plate;

said sole plate having a leading edge surface below said striking face;

said runners having flat end surfaces comprising leading faces, which flat end surfaces incline downwardly and rearwardly from said leading edge at an angle of approximately 55 degrees to the longitudinal front to rear lower surface of the respective runners;

said sole plate leading edge surface is parallel with and mates with said leading faces of said runners forming a continuous substantially flat surface;

each of said runners having the same cross-sectional area and the same longitudinal semi-circular configuration, which cross-sectional area and semi-circular configuration are the same throughout the length of each of the runners from the front edge of the sole plate to the rear edge of the sole plate;

said sole plate extends over a major portion of said sole and

constitutes approximately 55 percent of the total weight of the head;

said sole plate having slotted openings on each side thereof that extend to the respective sides of said runners;

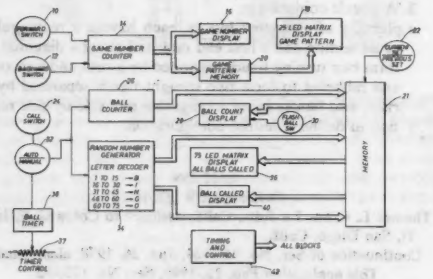
and portions of the sole of the wood body fitting in said slots and against the respective sides of said runners.

4,332,389

ELECTRONIC BINGO GAME

Comer C. Loyd, Jr., 5813 Mackinaw Rd., Houston, Tex. 77053, and James D. Benner, Houston, Tex., assignors to Comer C. Loyd, Jr., Houston, Tex.

Filed Jun. 23, 1980, Ser. No. 162,405
Int. Cl.³ A63F *3/06*
U.S. Cl. 273—237 **7 Claims**



1. An electronic bingo game played as a series of sets with each set consisting of one or more bingo games played as a series of called bingo numbers, each set initiated under command of a bingo caller, and where a bingo winner is determined by completing a predetermined bingo card pattern, the game comprising:

(a) a variable timer, for automatically timing the interval between bingo number selections in a set to give the game players a constant rate of bingo numbers called, the timer interval selectively variable over a predetermined range, said timer including means for manual setting of the timer inverval;

(b) a pattern storing means, for storing for a predetermined number of sets, the bingo pattern for each game in each set, said pattern storing means outputting for display at the start of each game the pattern for the next game to be played;

(c) a game counter responsive to initiation of a next game, for counting and displaying the number of games played;

(d) a number counter responsive to said timer, for counting and displaying the number of bingo numbers called in the set, said counter being reset at the start of each new set;

(e) a random number generator responsive to said timer, for randomly selecting the bingo numbers for each set played, each bingo number having an equal probability of selection; and

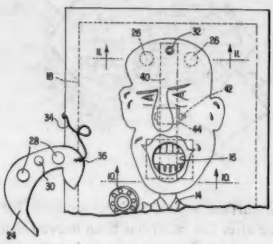
(f) a means responsive to said random number generator and said timer, for storing and displaying the bingo number called in a set, said means for storing the bingo numbers automatically retaining and outputting upon request from the caller the bingo numbers selected from the previous set, including the last ball called and the number of balls called in the previous set, until the start of the next set, said random number generator, said number counter and said timer cooperating together to select and display bingo numbers until terminated by the caller when a bingo winner is found.

4,332,390

TARGET WITH MAGNETICALLY-HELD, DISLODGEABLE INDICATOR

Joe Bury, Box 524, Buffalo, Wyo. 82834

Filed Sep. 16, 1980, Ser. No. 187,651
Int. Cl.³ F41J *5/00*
U.S. Cl. 273—389 **9 Claims**



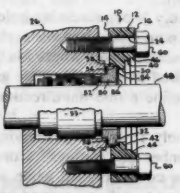
1. An amusement device comprising a generally flat target figure having a dislodgeable portion and a first opening defining a bull's-eye, means releasably holding said dislodgeable portion on the target figure until a projectile enters said first opening, and means for dislodging said portion including an arm pivotally mounted behind said target figure, said arm having one end disposed immediately behind said first opening, means for biasing said one end toward the rear of the target figure, and means on the other end of the arm arranged to pass through a second opening in the target figure so as to strike and completely dislodge said portion from the target figure when the said one end of the arm is moved by the force of impact of a projectile, wherein said target figure is a comic representation of a human and said dislodgeable portion is a toupee which, when removed from the target figure, leaves the human bald, and wherein said means releasably holding said toupee comprises a pair of magnets secured to the rear of said target figure on opposite sides of said second opening, said toupee having magnetic metal plates secured to its rear surface and spaced to overlie and be held by said magnets.

4,332,391

UNIVERSAL MECHANICAL SEAL GLAND

William A. Arnold, 15 Long Boat Pl., Savannah, Ga. 31410

Division of Ser. No. 142,139, Apr. 16, 1980, Pat. No. 4,256,313.
This application Nov. 17, 1980, Ser. No. 208,061
The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—11 **7 Claims**



1. A universal mechanical seal gland for positioning an annular seal against a shaft housing and a rotary seal member on a shaft, said seal gland comprising a solid body member formed of plastic and having front and rear parallel planar face surfaces, an aperture extending through said body member concentrically oriented with respect to a main axis perpendicular to said front and rear parallel planar face surfaces, said aperture being defined by a plurality of coaxial cylindrical

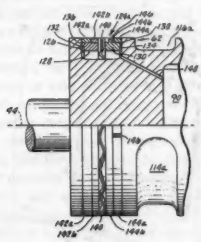
surfaces of different diameters with adjacent ones of said cylindrical surfaces being connected by planar sealing surfaces oriented perpendicularly to the axis of said coaxial cylindrical surfaces wherein said coaxial cylindrical surfaces include a central cylindrical surface of smaller diameter than the other cylindrical surfaces and a second cylindrical surface positioned adjacent said central cylindrical surface, a third cylindrical surface positioned adjacent and between said second cylindrical surface and said front planar face surface, a fourth cylindrical surface positioned adjacent and between said central cylindrical surface and a fifth cylindrical surface positioned adjacent the rear planar face surface.

4,332,392

DUAL SEALING RING SEAL WITH HYDRAULIC EXPANSION

Wilfred E. Boehringer, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 933,558, Aug. 14, 1978, Pat. No. 4,286,927.
This application May 26, 1981, Ser. No. 266,799
Int. Cl.[3] F16J *9/08, 15/38, 15/48;* **F04B** *1/16*
U.S. Cl. 277—27 **10 Claims**



1. A seal for use in a cylindrical groove in a cylindrical item positioned in a cylinder wherein said seal is subjected to reciprocating forces as the item and the cylinder rotate with respect to each other, the seal including:

two adjacent pairs of sealing rings having outer cylindrical surface portions whose outer cylindrical surface portions form the outer cylindrical surface of said seal, each pair having a side surface positioned to engage an adjacent side wall of the groove;

a pair of backup rings which are positioned to bear outwardly on said two adjacent pairs of sealing rings, each having a side surface positioned to engage the groove side wall; and

bias means positioned to force said side wall engaging surfaces of said sealing rings and said backup rings into engagement with the side walls.

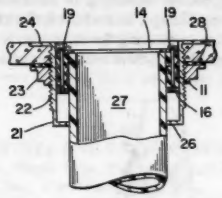
4,332,393

SELF CONTAINED SEAL FOR DRAINS

Casper Cuschera, 1047 77th Ave., Oakland, Calif. 94621

Filed Sep. 26, 1980, Ser. No. 190,919
Int. Cl.[3] F16L *21/04;* **E03C** *1/26*
U.S. Cl. 277—112 **2 Claims**

1. A self-contained gasket sealing assembly for a pipe end portion received within a pipe fitting with an annular space therebetween, comprising; a cylindrical, sleeve-like gasket received about said pipe and disposed within said annular space, a plurality of holes extending longitudinally through said gasket parallel to the axis thereof, a pair of compression rings disposed at opposed ends of said gasket, one of said rings having an inner diameter sufficient to receive said pipe end portion and an outer diameter less than the diameter of said annular space, said one ring including a like plurality of tapped holes, the other of said rings having an inner diameter less than sufficient to receive said pipe end portion and adapted to abut the end surface thereof, said other ring including a like plurality of screw holes therethrough, and screw means for extending through said holes of said other ring and gasket and engaging said tapped holes of said one ring for compressing said



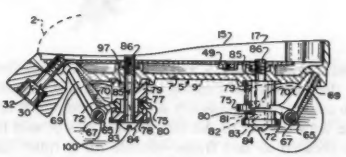
gasket longitudinally to effect radial expansion of said gasket and a sealing engagement of said gasket with the outer surface of said pipe and the inner surface of said pipe fitting.

4,332,394

ROLLER SKATE

Ronald R. Klawitter, Hermann, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.

Filed Jun. 16, 1980, Ser. No. 159,776
Int. Cl.[3] A63C *17/02*
U.S. Cl. 280—11.27 **3 Claims**



1. In a steerable roller skate sole plate and wheel truck assembly, the improvement comprising a one-piece elongated sole plate having a shoe-engaging part and a pair of support shaft bosses spaced along the long direction of said sole plate, each lying below the level of said shoe-engaging part and defining an open-ended substantially vertical support-shaft bolt-receiving passage, an elongated steel shape having internally threaded bolt-receiving spuds spaced along its length complementarily to said bosses and positioned to be coaxial with said boss openings and shaft bolts, for mounting wheel trucks, said bolts being threaded at their upper ends and extending through said boss passages and into threaded engagement with said spuds, said shape lying entirely below the level of said shoe-engaging part.

4,332,395

SELF-PROPELLED LANDSAILER

Leonard E. Zech, 202 E. 37th St., Suite 9, Boise, Id. 83704

Filed Jul. 18, 1980, Ser. No. 170,012
Int. Cl.[3] B62B *15/00*
U.S. Cl. 280—213 **4 Claims**

1. A motorless land vehicle comprising, in combination, a generally triangularly configured frame,

said frame formed of a plurality of elongated members,

said frame including a fork means substantially rigidly secured at the forward end of said frame to carry a rotatable forward wheel,

said frame including a longitudinal axis centrally configured within said frame from fore and aft,

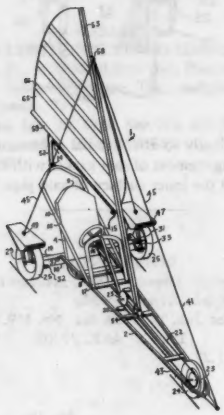
a rear axle support substantially rigidly secured to said frame and transversely oriented with respect to the longitudinal axis of said frame,

a pair of wheel forks pivotally secured about a generally

vertical axis to the outer opposite ends of said rear axle support,

said wheel forks including the attachment of wheel-carrying stub axles,

a rear steering means including, in combination, a steering unit, a steering linkage, said wheel forks, said wheel-carrying stub axles, a steering lever, a clevis and pin, and a steering lever slot wherein movement of said steering unit



causes said clevis and pin to slide in said steering lever slot for the purpose of causing each of said wheel-carrying stub axles to turn generally different accounts at the same time with respect to the longitudinal axis of said frame,

a seat secured to said frame suitable for a rider, said seat including means for adjustment, said seat including a roll-bar portion, said frame including rider operable drive means.

4,332,396

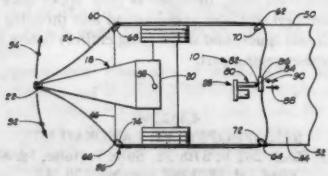
BACKING STABILIZER

George M. Ashby, Jr., 520 E. Hazel, Ponca City, Okla. 74601

Filed Jul. 28, 1980, Ser. No. 172,570

Int. Cl.[3] B60D *1/00*

U.S. Cl. 280—474 13 Claims



1. A backing stabilizer adapted for use with a vehicle having a vehicle body with a first end, a second end, a first side and a second side, and a tongue having a first end pivotally connected to the vehicle body generally near the first end of the vehicle body and a second end, the tongue extending a distance from the first end of the vehicle body, comprising:

a continuous cable having a predetermined length, a portion of the cable being connected to the tongue generally near the second end of the tongue;

means movably connecting a portion of the cable to the vehicle body generally near the first side of the vehicle body and movably connecting another portion of the cable to the vehicle body generally near the second side of the vehicle body for supporting a portion of the cable from the vehicle body; and

means connected to the cable generally near the portion of the cable between the portion of the cable movably connected to the vehicle body generally near the first side of the vehicle body and the portion of the cable movably connected to the vehicle body generally near the second side of the vehicle body for moving the cable to a slack condition wherein the tongue is pivotally movable and for moving the cable to a taut condition wherein the tongue substantially is held in a nonpivotable condition by the cable.

4,332,397

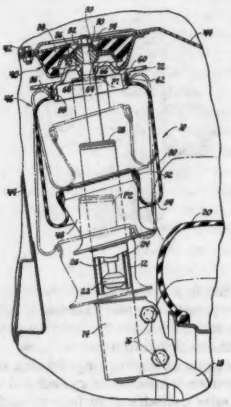
STEERABLE SUSPENSION STRUT WITH PNEUMATIC SPRING

Charles B. Steger, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 7, 1980, Ser. No. 166,564

Int. Cl.[3] B60G *15/12*

U.S. Cl. 280—693 3 Claims



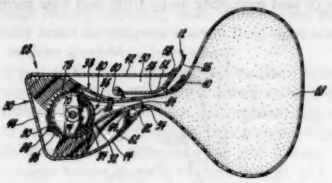
1. A suspension strut for steerably mounting a road wheel assembly to a vehicle body and for pneumatically suspending the body with respect to said road wheel, comprising an elongated tubular support having one end connected to said steerable road wheel assembly and extending upwardly therefrom, shock absorber means operatively mounted in said support including an oil filled cylinder tube operatively mounted in said support, a piston mounted for reciprocal movement in said cylinder tube having a piston rod extending upwardly therefrom, an upper cap member through which said piston rod slidably extends for closing said tubular support, a boot end cap secured to said piston rod adjacent the upper end thereof, a pneumatic spring including a tubular flexible boot, mounting means for securing the lower end of said boot to said tubular support, said boot extending from said mounting means, a boot end cap having an opening through which said piston rod extends, static fluid seal means operatively mounted by said boot end cap and disposed around said piston rod to provide an air-tight seal for said pneumatic spring, an upper mount including universal ball joint means with a ball mounted on said piston rod above said boot end cap for pivotably mounting said piston rod to said vehicle body to permit said piston rod to turn with said pneumatic spring when said steerable road wheel assembly is turned and nut means threaded onto the upper end of said piston rod means and above said ball joint means to secure said ball of said ball joint means and said boot end cap to said piston rod.

4,332,398

INFLATABLE RESTRAINT SYSTEM

George R. Smith, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 11, 1980, Ser. No. 167,410
Int. Cl.³ B60R 21/08
U.S. Cl. 280—732 3 Claims



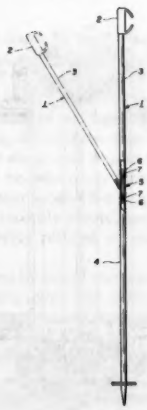
1. An inflatable restraint system for a motor vehicle comprising, in combination: a support housing adapted to be fixedly secured to said motor vehicle; a diffuser mounted in said support housing and having a plurality of slots formed therein; an inflator positioned in said diffuser for providing a pressurized gas which is adapted to flow through said slots in said diffuser; and opening formed in said support housing; a pair of retarder members mounted in said support housing adjacent said opening; a flow-control device for receiving said gas flowing through said slots in said diffuser and having a body portion terminating with an elongated nozzle which extends between said pair of retarder members and registers with said opening; and a restraint cushion made of a flexible material enclosing said diffuser and said flow-control device, with a major portion of said restraint cushion being folded to one side of said pair of retarder members and with portions of said restraint cushion being pressed into engagement with said body portion of said flow-control device by said pair of retarder members so that initially the gas flow emanating from said diffuser during inflation is directed by said nozzle against a small portion of the total restraint cushion and thereby causes said major portion of said restraint cushion to be gradually deployed through said opening in said support housing.

4,332,399

SKI POLE

Wilson E. Kepple, 121 15th St., New Florence, Pa.

Filed Jul. 9, 1980, Ser. No. 167,112
Int. Cl.³ A63C 11/22
U.S. Cl. 280—819 4 Claims



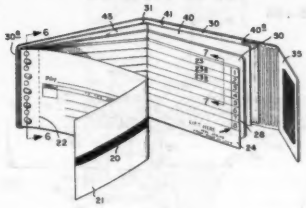
1. A ski pole having an upper cylindrical portion and a lower cylindrical portion, a coil spring having ends, readily detachable means for detachably securing said ends to said upper and lower cylindrical portions, said coil spring being the sole interconnecting means between said detachable means and being of a diameter substantially that of said upper and lower cylindrical portions and of such stiffness as not to compress longitudinally during normal operations of the ski pole but which will bend in a lateral direction substantially beyond the normal outer limit of said upper cylindrical portion upon the application of an abnormal bending force on the ski pole.

4,332,400

POCKET-SIZE ONE-WRITE CHECKBOOK

Eric R. Hayman, Maple Glen, Pa., assignor to Safeguard Business Systems, Inc., Fort Washington, Pa.

Filed Apr. 7, 1980, Ser. No. 137,918
Int. Cl.³ B41L 1/20, 3/00
U.S. Cl. 282—3 A 25 Claims



1. A device for use in producing a field record of data entered on a check, comprising:

means providing a portable writing surface,

an elongated data sheet overlying said writing surface,

a plurality of removable data receiving record strips carried on said data sheet in parallel relation,

means for releasably securing said record strips to said data sheet,

at least one check having a pressure-sensitive ink-transfer strip on its underside adapted to be placed on top of said data sheet, and

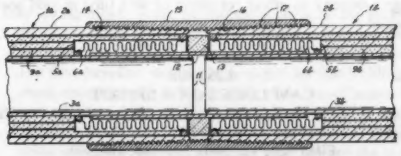
means extending along a margin of said writing surface for releasably mounting said check on said data sheet with the pressure-sensitive ink-transfer strip of the check overlying one of said data-receiving record strips, whereby data placed on the check is transferred simultaneously onto the underlying record strip which can be subsequently removed from the record sheet.

4,332,401

INSULATED CASING ASSEMBLY

Edgar O. Stephenson, W. Tacoma; John M. Kohl, Tacoma, and Charles R. Cunningham, S. Seattle, all of Wash., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,667
Int. Cl.³ F16L 59/14
U.S. Cl. 285—47 19 Claims



1. An insulated casing assembly comprising;

(a) a pair of coaxially arranged casings, each casing compris-

ing radially spaced inner and outer tubular sections defining an annular space therebetween, and expandible sealing means extending from a point spaced inward from the end of each said inner tubular section in an axial direction to said outer tubular section thereby forming an axially extending cavity around each said inner tubular section;

(b) a sleeve tightly fitting over the opposed ends of the inner tubular sections and extending into said axially extending cavities;

(c) a filler ring fitted on said sleeve and disposed between the opposed ends of said casings; and

(d) means for coupling said outer tubular sections.

4,332,402

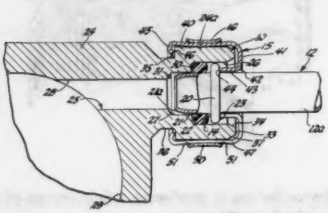
QUICK CONNECT HYDRAULIC COUPLING ASSEMBLY

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1980, Ser. No. 202,128

Int. Cl.³ F16L *21/08*

U.S. Cl. 285—86 **3 Claims**



1. A quick connect conduit coupling comprising a socket member having a tube receiving socket aperture at one end thereof interconnected by a radial inward extending shoulder to a flow passage means therein; said socket member having an external annular flange thereon spaced from said one end of said socket member; a tube having an upstanding annular bead thereon with a pilot tube portion extending therefrom; an annular seal encircling said pilot tube portion adjacent one side of said annular bead; said pilot tube portion and said bead with said seal on said pilot tube portion being adapted to be sealingly slidably received in said socket aperture; an annular, resilient split retainer having radially inward extending first return bent portions at one end thereof terminating in first abutment surfaces of an unstressed internal diameter less than the outer diameter of said flange whereby it is adapted to be slidably received over said annular flange of said socket member and a radially inward extending second return bent portion at its opposite end terminating in a second abutment surface of an unstressed internal diameter less than the maximum diameter of said annular bead whereby it is adapted to be slidably received over said annular bead so that said second abutment surface can be positioned to engage against the opposite side of said annular bead; and, an annular collar adapted to encircle said split retainer intermediate the ends thereof whereby to bias said first return bent portions radially inward so as to effect locking engagement of said first abutment surfaces against said annular flange whereby to effect retention of said tube in said socket member.

4,332,403

CAM LOCK FOR A SPIGOT

Joseph F. Auriemma, Point Pleasant, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

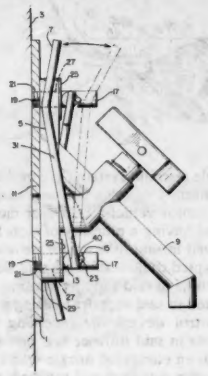
Filed Sep. 12, 1980, Ser. No. 186,560

Int. Cl.³ F16L *5/00*

U.S. Cl. 285—189 **5 Claims**

1. A securing assembly for use in securing a press plate spigot to a base member on a filter press, said securing assembly comprising:

lug means attached to the base member for receiving said spigot thereon, said lug means extending through openings in a base plate of said spigot and out the side of said base plate away from the base member and said lug means having cut out portions which extend transversely and are downwardly inclined and facing said spigot adjacent said side of said base plate away from said base member; and



urging means for urging and holding said spigot against said base member, said urging means including a lever having at one end a crank arm comprising a cam surface on one side and an engaging projection on the other side, said engaging projection being received in said cut out portions and said cam surface being for urging said spigot against said base member as said lever is rotated about an arc, said crank arm locking in said lug means when said engaging projection is rotated past the vertical plane which is parallel to said lug means.

4,332,404

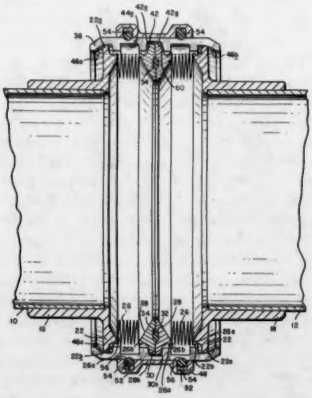
FLEXIBLE TUBING COUPLING

John Huffman, Chatsworth, Calif., assignor to Metal Bellows Corporation, Sharon, Mass.

Filed Aug. 27, 1980, Ser. No. 181,815

Int. Cl.³ F16L *27/00*

U.S. Cl. 285—223 **13 Claims**



1. In a flexible tubing coupling for joining first and second

tubing ends while permitting relative motion between said ends, the combination of

A. first and second flanged ferrules for positioning at the respective tubing ends,

B. first and second metal bellows secured at one of their ends respectively to said first and second ferrules,

C. first and second end fittings secured to the respective opposite ends of said bellows, said first and second end fittings having opposing faces which when compressed axially coact to comprise a static fluid-tight seal, and

D. a retainer assembly comprising

1. a pair of identical semicircular retainer halves aligned together end to end to form a ring encircling said end fittings and ferrule flanges, said retainer halves and end fittings having opposing surfaces which wedge together so as to axially compress the end fittings when the retainer halves encircle the end fittings, and

2. a rigid ring for snugly encircling and capturing the retainer halves so as to maintain them in encircling engagement on said end fittings.

4,332,405

ADJUSTABLE FRAME FOR SUPPORTING MACRAME

Robert E. Lawrason, Sr., 3418 Proctor, Flint, Mich. 48504

Filed Jul. 3, 1978, Ser. No. 921,254

Int. Cl.³ B65H *69/04*

U.S. Cl. 289—16.5 **2 Claims**

1. An adjustable frame for supporting macrame comprising:

at least three legs, each having a transverse through bore at one end,

an annular ring loosely received in said through bores to hold said one ends of said legs together while at the same time permitting the opposite ends of said legs to be selectively pivoted about said ring to vary the height of said frame and to be selectively circumferentially displaced from one another around the ring whereby each said leg can be simultaneously pivoted and circumferentially displaced or merely pivoted or merely circumferentially displaced,

a pulley supported by one of said legs near said ring, support means extending over said pulley and having one end adapted for receiving and supporting the macrame while the macrame is being formed;

means carried by one of said legs and adjustably movable therealong;

an end of said support means opposite said macrame being attached to said adjustable means whereby movement of said adjustment means along said leg varies the position of the macrame.

4,332,406

LOCK CATCH FOR DOORS

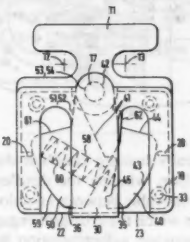
Wolfgang Ehrmann, Ruppichteroth, and Claus Winter, Hamburg, both of Fed. Rep. of Germany, assignors to Firma Hafele KG, Ruppichteroth, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,857

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845110

Int. Cl.³ E05C *3/12*

U.S. Cl. 292—18 **12 Claims**



1. A lock catch for at least one door having at least one holding element thereon comprising:

a housing formed with a first and a second door-mounted holding element receiving slot therein;

a first and second locking lever pivotably mounted within said catch housing about a common pivot axis;

spring means positioned within said catch housing to normally bias said locking levers to project into a respective one of said holding element-receiving slots;

a first bevelled surface formed on each of said locking levers engageable by the associated holding element on the door upon the closing of same so as to effect pivotal movement of the locking lever in a first direction and permit entrance of the holding element into an inner end region of said slot inwardly of the locking lever;

a second bevelled surface formed on each of said locking levers engageable by the associated holding element of the door upon withdrawal of same from said inner end region of the slot to effect pivotal movement of the locking lever in a second and different direction and permit withdrawal of the holding element from said slot;

the first of said locking levers having a blocking shoulder formed thereon and normally extending into the inner end region of the slot associated with the second locking lever such that reception of the holding element into the inner end region of said second slot prevents pivotal movement of said first locking lever by engagement with said blocking shoulder;

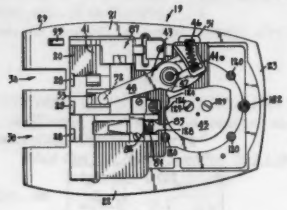
said spring means being positioned relative to the pivot axis of the locking levers and said bevelled surfaces thereof such that the effective lever arm of the locking lever when the first bevelled surface is engaged by the holding element entering said slot is greater than the effective lever arm of the spring acting on said locking lever and the effective lever arm of the spring acting on the locking lever is greater than the effective lever arm of the locking lever when said second bevelled surface is engaged by the holding element during withdrawal of the holding element from said inner end region of the slot.

4,332,407

AUTOMATICALLY LOCKING CROSSBOLT DEADLOCK

Russell W. Waldo, St. Paul, and George L. Engstrom, Minneapolis, both of Minn., assignors to Ideal Security Hardware Corporation, St. Paul, Minn.

Filed Dec. 12, 1979, Ser. No. 103,068
Int. Cl.³ E05C 3/10
U.S. Cl. 292—161 8 Claims



1. An automatically locking crossbolt deadlock suited for attachment to a door, wherein the deadlock is of the type having a crossbolt movable between an unlocked position and a locked position in which the crossbolt engages a strike, a lock button movable between a first position in which the lock button positively holds the crossbolt in its locked position, a second position in which the crossbolt is free to move between its locked and unlocked positions, and a third position in which the lock button positively holds the crossbolt in its unlocked position to prevent automatic relocking of the crossbolt upon closing of the door, and means for moving the crossbolt between its locked and unlocked positions, wherein the moving means includes a rotatable handle, and wherein the improvement relates to the lock button and comprises:

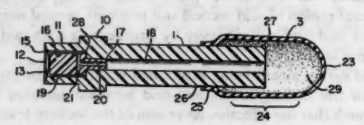
means for moving the lock button from its first to its second position upon rotation of the handle, whereby movement of the lock button is automatically effected upon rotation of the handle to allow unlocking of the crossbolt without the need for first manually moving the lock button from its first to its second position, and for moving the lock button from its second to its third position upon further rotation of the handle such that the lock button is placed into its third position when the handle is rotated to unlock the crossbolt.

4,332,408

DEVICE FOR REMOVING AND REPLACING SOFT CONTACT LENSES WORN ON THE HUMAN EYE

Delma M. Cointment, 914 Pontalba St., New Orleans, La. 70124

Division of Ser. No. 950,555, Oct. 12, 1978, Pat. No. 4,238,134, which is a continuation of Ser. No. 773,473, Mar. 2, 1977, abandoned. This application Aug. 18, 1980, Ser. No. 179,409
Int. Cl.³ A61F 9/00
U.S. Cl. 294—1 CA 5 Claims



1. A device for handling and inserting soft contact lenses comprising in combination:

a. a tubular body member formed with a lumen or axial hole extending from a first end to a second end thereof;

b. a suction bulb of flexible material with an opening through which said tubular body member extends adjacent said first end of said tubular body member; and

c. a plug disposed within said tubular body member adjacent said second end of said tubular body member;

wherein said lumen is formed with an enlarged portion adjacent said second end of said tubular body member; said plug includes a main body portion and a stem portion with said main body portion being slightly smaller in diameter than and extending substantially coaxially within said enlarged portion, thus forming an annular passage therebetween; said stem portion extends axially inwardly beyond said enlarged portion of said lumen and is in snug contact with a smaller diameter, axially inward part of said lumen; and said plug is formed with an axial passage in said stem portion and a diametrically extending passage in said main body portion intersected by said axial passage whereby fluid communication is established between the interior of said suction bulb and said lumen at said section end by way of said lumen at said first end, said axial passage, said diametrically extending passage, and said annular passage.

4,332,409

COMBINATION FORK

Edward Stachowicz, Philadelphia, Pa., assignor to BMS Roasting Equipment Corporation, Philadelphia, Pa.

Filed Jul. 10, 1980, Ser. No. 167,574
Int. Cl.³ A47J 43/28
U.S. Cl. 294—2 6 Claims

1. A fork comprising a handle, an elongated shaft, and tines, for cooking food morsels impaled on the tines over an open source of heat, wherein the handle includes at the butt end thereof an open bore, and a smaller fork force-fit into said bore and being extractable from said bore to remove the cooked food morsel from the tines of the larger fork.

4,332,410

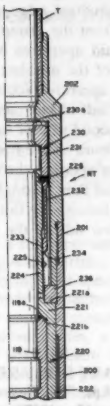
RETRIEVING TOOL FOR WELL PACKER

John R. Baker, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Jul. 21, 1980, Ser. No. 170,493
Int. Cl.³ E21B 31/00
U.S. Cl. 294—86.18 3 Claims

1. A retrieving tool for a packer having an upstanding nipple with a downwardly facing, upwardly inclined shoulder comprising: a housing structure having an upper end attachable to a tubing string and a lower end dimensioned to surround the packer nipple; a locking member mounted within said housing structure for limited axial movement relative to the housing structure, said locking member having an upper ring portion and a plurality of peripherally spaced, downwardly projecting

locking fingers constructed and arranged to snap radially inwardly into engagement with the nipple shoulder; an internally projecting locking shoulder on said housing structure movable upwardly by retrieving motion of the tubing string to engage said locking fingers and hold same in engagement with said nipple shoulder to apply upward force to the packer; a stop member mounted within said housing structure for limited downward movement relative to said housing structure; shearable means preventing relative movement of said housing



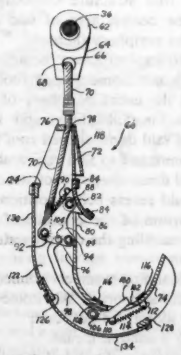
structure and said stop member; means on the upper end of said stop member for reception of downward forces, thereby shearing said shearable means and advancing said stop member downwardly relative to said housing structure; and an internally projecting abutment in said housing structure engageable with said stop member by upward retrieval movement of the housing structure prior to engagement of said housing locking shoulder with said locking fingers, thereby permitting retrieval of the retrieving tool.

4,332,411

OIL WELL PIPE PICKUP AND LAYDOWN APPARATUS

Rex B. Ellzey, Laurel, Miss., assignor to Benton Casing Service, Inc., Houma, La.

Filed Jul. 2, 1979, Ser. No. 53,832
Int. Cl.[3] B66C *1/44*
U.S. Cl. 294—104 **19 Claims**



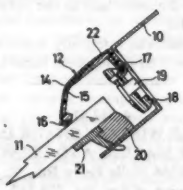
1. A clamping tool for use in lifting, lowering and moving drill pipes, casings, tubes and the like, comprising a rigid member to be clamped to a pipe for supporting the same, pad means secured to said member by a first pivot means for turning movements to clampingly engage or disengage against a surface of a pipe, and connecting means secured to said member by a second pivot means for connecting the tool to a handling device such as a pickup and lay down machine, said rigid member, connecting means and first and second pivot means being so shaped and arranged with respect to one another that the weight of a pipe exerted on the tool will cause the pad means automatically to turn and lockingly clamp the pipe, and lifting the pipe slightly to remove its weight from the tool will cause said pad means automatically to release its clamping engagement with the pipe, said rigid member being J-shaped in cross section so as to receive a pipe end in its curved base, said pad means being secured by said first pivot means to one corner of a triangular plate having a second corner secured to the stem of the J-shaped member by a third pivot means, said connecting means being secured by said second pivot means to the third corner of said triangular plate.

4,332,412

ACCESSORY MOLDING STRIP

Takaaki Nakazawa, Toyota; Takenori Nagata, Chiryu; Yasuo Kuroda, Kariya, and Toshio Suzuki, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 27,293, Apr. 5, 1979, abandoned, and a continuation of Ser. No. 852,934, Nov. 18, 1977, abandoned, which is a continuation of Ser. No. 675,914, Apr. 12, 1976, abandoned. This application Jul. 14, 1980, Ser. No. 168,485
Claims priority, application Japan, Apr. 25, 1975, 50-51126
Int. Cl.[3] B62D *27/00*
U.S. Cl. 296—29 **2 Claims**



1. An accessory molding strip for a motor vehicle window comprising:

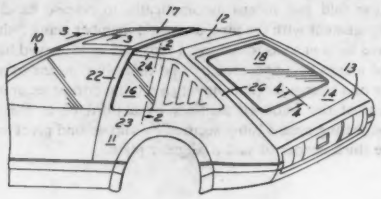
an elongated wrapping member made of stainless steel of about 0.2 mm in thickness for extending at least along one side of the window and bridging between the window and the body of the vehicle, an edge of said member for positioning adjacent said window being curved inwardly for resting against the window, the opposite edge for positioning adjacent the vehicle body having a portion bent approximately 90° from the main body portion of the wrapping member for substantially parallelling the body of the vehicle; and

a plastic reinforcing member permanently affixed to the rear surface of said wrapping member, said reinforcing member extending around said curved edge and forming a cushion between said curved edge and the window, and extending around the free edge of said bent portion and along the front surface of said bent portion, forming a protective cushion between the front surface of said bent portion and the body of the vehicle, said wrapping member and said reinforcing member being self-supporting between said curved edge and said bent portion.

4,332,413
WINDOW ASSEMBLY

Jeffrey A. Erion, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 15, 1980, Ser. No. 178,649
Int. Cl.³ B60J 1/02
U.S. Cl. 296—84 R **4 Claims**

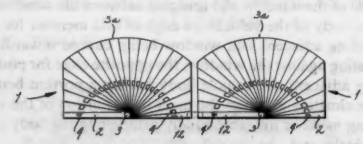


1. In combination, a vehicle body panel having an aperture of predetermined size and shape therein;
and a window assembly for altering the appearance of the vehicle body panel in the area of the aperture;
the window assembly comprising a glass fiber reinforced, substantially opaque, polyester panel contoured for external attachment to the vehicle body panel in position to conceal the aperture;
the polyester panel having a plurality of openings of smaller and different configurations than the body aperture and being formed with substantially peripherally extending rabbets around each of its openings;
inserts complementary in shape to respective ones of the polyester panel openings positioned in the latter adjacent the rabbet thereof;
one of said inserts being a window panel and a second one of said inserts being a lamp housing;
and an injection moldable elastomeric material molded around the peripheral edge of each insert in cohesive relationship to the latter and to the polyester panel rabbet adjacent thereto;
the elastomeric material integrally interlocking the periphery of each insert to its adjacent rabbet.

4,332,414
AUTOMOBILE WINDOW SHADE DEVICE AND METHODS OF MAKING AND USING THE SAME

Robert J. Surtin, 10266 Halls Ferry Rd., St. Louis, Mo. 63136

Continuation-in-part of Ser. No. 888,192, Mar. 20, 1978, abandoned, and a continuation-in-part of Ser. No. 126,302, Mar. 3, 1980. This application Mar. 31, 1980, Ser. No. 135,885
Int. Cl.³ B60J 3/00
U.S. Cl. 296—97 D **2 Claims**

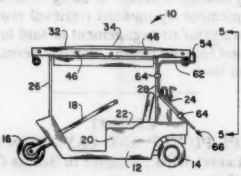


1. An automobile window shade comprising:
a. bracket means for positioning said shade between the windshield and the dash of said automobile,
b. a plurality of substantially flat elongated members pivotally mounted to said bracket means proximate one end of said members, said members disposed in stacked relationship to each other, said flat elongated members having essentially uniform width and being manually openable to about 180° to form a shade having about one-half circle in shape, said members each being provided with a series of lengthwise slots located intermediate the pivoted end and a free end,
c. a joinder tape operably mounted to said members and secured thereto and disposed within said apertures in said members to provide means for fanning said members into an open position and for retaining said members in overlapped open position,
d. each said member being provided with four apertures, the first three apertures being equally spaced in a group adjacent to one longitudinal edge of the member and the fourth is spaced from the group across the width of the member, all of said apertures being disposed in a row across the width of the member and said joinder tape is disposed in said apertures such that said joinder tape passes from a first side of said member, through the fourth aperture to the second side of said member, through the next adjacent aperture to the first side and then skipping the next successive aperture through the first aperture to the second side and then through the second aperture to the first side and through the third aperture to the second side and to the first side of the next adjacent elongated member.

4,332,415
OPEN CART ROOF STRUCTURE

Thomas P. Williams, Apt. 703, Regency House, 435 S. Gulfstream Ave., Sarasota, Fla. 33577

Filed Oct. 12, 1978, Ser. No. 950,836
Int. Cl.³ B60J 7/02
U.S. Cl. 296—213 **2 Claims**



1. An improved cover for a motorized golf cart, comprising in combination:
a dome-shaped roof structure contoured to drain water away from the central area of said dome-shaped roof structure to the periphery thereof;
said dome-shaped roof structure including a recess fromed integrally with said dome-shaped roof structure and extending about the entire periphery of said dome-shaped roof structure for collecting water flowing from said central area of said dome-shaped roof structure;
a gutter wall connected to said recess about the entire periphery of said dome-shaped roof structure;
the bottom of said recess being positioned lower than the lowermost portion of the contour of said dome-shaped roof structure enabling the runofff water to collect in said recess;
a plurality of upstanding members connected to said motorized golf cart for supporting said dome-shaped roof structure over said motorized golf cart;
a drain including a conduit means;
means for connecting said conduit means to the portion of said gutter wall disposed about the rear area of said roof structure with respect to the direction of travel of said motorized golf cart; and
said conduit means being disposed along one of said upstanding members.

4,332,416

VEHICLE ROOF

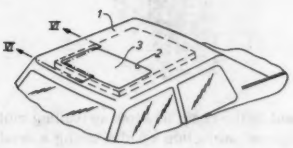
Alfons Lutz, Emmering; Walter Schätzler, Aufhausen; Hans Jardin, Inning; Werner Sielk, Erftstadt-Lechenich, and Julius Frank, Cologne, all of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Stuttgart, Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,263

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914855

Int. Cl.³ B60J 7/10

U.S. Cl. 296—216 29 Claims



1. A vehicle roof with a roof aperture, a frame mounted to said roof and surrounding said aperture, a displaceable closure panel for opening and closing said aperture, and a pre-assembled installation unit which is attachable to said frame and upon which said closure panel is mountable, said installation unit comprising longitudinal guides, a cross-piece interconnecting said guides at a forward end thereof, closure panel support means slideable along said guides for supporting said closure panel for pivotal displacement about a transverse axis and for longitudinal displacement along said guides, cable drive means connected between said cross-piece and said support means for producing said displacement, and a rear gutter mounted for longitudinal displacement along said guides with said support means, all of which are operationally associated with each other in a manner enabling complete testing of said cable drive means without attachment of said installation unit to said frame.

4,332,417

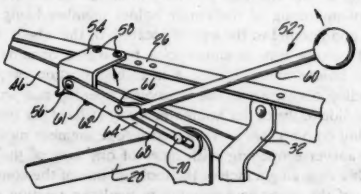
RECLINING ACTUATOR FOR A RECLINER CHAIR

Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Dec. 6, 1979, Ser. No. 100,951

Int. Cl.³ A47C 1/023

U.S. Cl. 297—329 8 Claims



1. In a recliner chair having a stationary chair frame with spaced apart side frame portions, and a seat structure, the improvement comprising linkage means mounting said seat structure on said chair frame between the side portions thereof for movement between a normal seating position and a reclining position, said linkage means including a frame plate attached to said frame and a seat plate attached to said seat, lever means pivotally connecting said plates, actuator means operable when manually actuated to move said seat structure between said seating and reclining positions, said actuator means including a handle pivotally connected to one of said plates and a connector link pivotally connected to said handle and to the other of said plates so that movement of said handle in one direction causes relative movement of said plates to in turn cause movement of said seat structure from a normal seating position to a reclining position, said actuator means being located on one side of said chair between said seat structure and a corresponding one of said chair frame side portions.

4,332,418

ADJUSTABLE HINGE MOUNT FOR SEATS HAVING RECLINABLE BACKREST, PARTICULARLY MOTOR VEHICLE SEATS

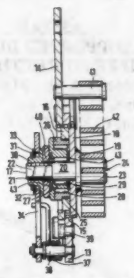
Willibald Strowik, Remscheid-Lennep, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,943

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1978, 2854636

Int. Cl.³ A47C 1/025, 1/027

U.S. Cl. 297—362 12 Claims



1. An adjustable hinge mount for seats having a seat part and a reclinable backrest, comprising: a fixed hinge mount member attached to the seat part and a tiltable hinge mount member attached to the backrest; a pivot axle rigidly connected to one of said hinge mount members; an eccentric disk support for rotation on said axle; a wobble gear assembly including an inner gear formed on the hinge mount member and a spur gear formed on the other hingemount member and being in mesh with said spur gear; a sleeve having an outer surface coaxially splined to said spur gear, and an inner surface supported for rotation on said eccentric disk; and means for selectively locking said eccentric disk to said sleeve and said sleeve to said axle to arrest said reclinable backrest in an adjusted angular position relative to said seat part.

4,332,419

SEAT

Ignaz Vogel, Kleinsteinbacher Str. 42-44, Karlsruhe 41-Stu, Fed. Rep. of Germany (7500)

Filed Jan. 21, 1980, Ser. No. 113,619

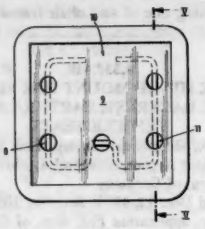
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902386

Int. Cl.³ A47C 4/02, 27/05

U.S. Cl. 297—443 6 Claims

1. A seat, especially a vehicle passenger seat, comprising: a support structure; seating and backrest members removably mounted on said support structure, each consisting of a molded plastic foam member; with a reinforcement and support frame of rigid wire foamed in a predetermined pattern into said molded plastic foam member so as to be integral therewith; and support means associated with said support structure and projecting therefrom, each of said molded plastic foam members having spaced openings extending into said foam member and arranged in a pattern corresponding to the pattern of the reinforcement and support frame therein such that the rigid wire of said support frame intersects, and is exposed in, said openings

and said support means being arranged in the same pattern and having mounting clips extending into said openings and catch-



ingly engaging and supporting said exposed wire therein for releasably supporting said seating and backrest members.

4,332,420

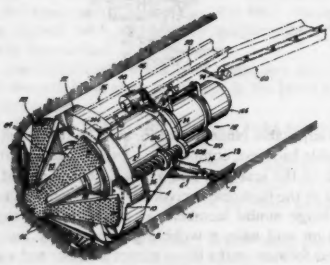
RECIPROCABLY SUPPORTED DUAL DRIVE MEMBER AND FEATURES THEREOF

William D. Coski, 3061-69th SE., Mercer Island, Wash. 98040

Filed Jan. 11, 1980, Ser. No. 111,322

Int. Cl.³ E21D *9/10, 9/12*

U.S. Cl. 299—31 **98 Claims**



1. In combination, a moveably supported member, a support for reciprocably mounting the member, stroke shifting means which are operable to determine the location of the stroke of the member on said support along the axis of reciprocation of the member, so that points on the member and the support are spaced apart from one another a first distance when the member is at the limit of its stroke in one direction of reciprocation thereof, and whereby the location of the stroke can be shifted along the axis without substantially changing the length of the stroke, to relocate the points in closer proximity than said first distance to one another when the member is at the limit of its stroke relative to the support in the one direction of reciprocation thereof.

4,332,421

COUPLING DEVICES FOR CONNECTING A MINERAL MINING MACHINE TO A DRIVE CHAIN

Gerhard Merten, Lünen; Oswald Breuer, Dortmund-Husen, and Bernd Steinkuhl, Lünen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lünen, Fed. Rep. of Germany

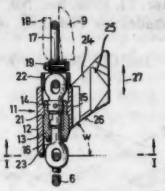
Filed Mar. 3, 1980, Ser. No. 125,933

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908828

Int. Cl.³ E21C *35/08, 27/34*

U.S. Cl. 299—34 **12 Claims**

1. In or for a mineral mining installation comprising a winning machine movable back and forth along a guide means of a drive chain located in a guide channel in the guide, said guide being arranged on the mineral face side of a longwall conveyor and having a slot leading from said guide channel and opening towards the mineral face, an improved coupling device for connecting the drive chain to the machine, comprising: a casing provided with shackle means for connection both to the



machine and to the chain to allow swivelling motion therebetween, a lateral projection on the casing extending through said slot towards the mineral face, and a shaped region forming a nose at the end of the device adjacent the chain which cooperates with said lateral projection to remove material accumulating in the guide channel out through said slot.

4,332,422

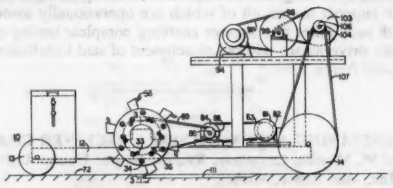
PAVEMENT PLANING DEVICE

Howard H. Hilshorst, c/o Hiott Corp., 2401 Bobmyer Rd., Fairfield, Ohio 45014

Filed Aug. 14, 1975, Ser. No. 604,601

Int. Cl.³ E01C *23/12*

U.S. Cl. 299—39 **2 Claims**



1. A device for removing a part of a surface which comprises a wheel, means for rotating the wheel about a transverse axis, a cutter holder member pivotally mounted on the wheel, the axis of mounting of the cutter holder member being spaced from and parallel to the axis of rotation of the wheel, an elongated cutting tool mounted in a transverse opening in the cutter holder member with a head end portion of the tool extending outwardly of the transverse opening and projecting to one side of the cutter holder member, walls of the transverse opening converging, an L-shaped wedge member mounted in the transverse opening with faces of one arm of the wedge member engaging a face of the tool and one of the converging walls of the transverse opening in wedging relation and the other arm of the wedge member bearing on an end of the tool remote from the head end portion to hold the tool in the transverse opening, a restraining stop member mounted on the wheel and engageable by the cutter holder member as the cutter holder member swings outwardly as the wheel is rotated to position the cutter holder member with the tool in position to make an impact on the surface, and a retraction stop member mounted on the wheel and engageable by the cutter holder member as the cutter holder member swings backwardly following impact with the surface, the retraction stop member having line contact with the cutter holder member at the instants of contact and separation, the cutter holder member being arranged to rebound from the retraction stop member so that the tool makes a second impact on the surface.

4,332,423

TWO-CIRCUIT PRESSURE CONTROL UNIT

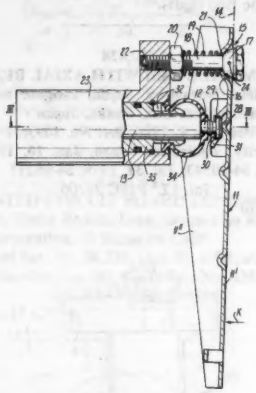
Bernd Schopper, Frankfurt am Main, and Peter Tandler, Falkenstein, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,523

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927423

Int. Cl.[3] B60T *8/02, 8/18*

U.S. Cl. 303—22 R 36 Claims



1. A two-circuit pressure control unit having a change-over point which is externally adjusted, said unit being employed in a two-circuit hydraulic brake system comprising:

a housing containing two blind end bores having parallel longitudinal axes, each of said bores containing therein a control piston having an actuating pin projecting therefrom out of an associated one of said bores, each of said control pistons being associated with a different one of said two brake circuits; and

a common control lever having a control force acting on one end thereof directly acting on both of said actuating pins for even distribution of said control force to said control pistons, said control lever being supported by said housing at a point spaced from said actuating pins to enable tilting of said control lever about a first axis corresponding to its longitudinal axis and a second axis perpendicular to said first axis at said point.

4,332,424

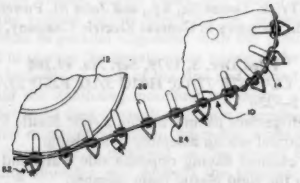
LOW DISTURBANCE TRACK CLEAT AND ICE CALK STRUCTURE FOR FIRM OR ICY SNOW

James A. Thompson, Logan, Utah, assignor to De Lorean Manufacturing Company, Bloomfield Hills, Mich.

Continuation of Ser. No. 892,710, Apr. 3, 1978, Pat. No. 4,218,101. This application Nov. 15, 1979, Ser. No. 94,383

Int. Cl.[3] B62D *55/24, 55/28*

U.S. Cl. 305—35 EB 3 Claims



2. A vehicle crawler track, comprising endless track means; and a plurality of track cleats secured at intervals along said track means transversely thereof, each of said cleats comprising an elongated plate member extending transversely of said track means and transversely formed to provide an elongated, generally triangulated, oval, substantially closed cross section having a base and leading and trailing portions the full length of said member, the leading and trailing portions of the plate member of each cleat both including an edge, the trailing portion of said plate member being curled generally toward the leading portion thereof, and the lowermost extension of said trailing portion being curled sharply to meet the leading portion substantially normal thereto, the edge of said leading portion extending further from the base portion of said plate member than the edge of the trailing portion thereof.

4,332,425

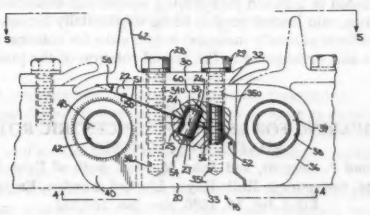
MASTER TRACK LINK ASSEMBLY

John M. Baylor, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 31, 1980, Ser. No. 221,836

Int. Cl.[3] B62D *55/20;* B67D *55/28*

U.S. Cl. 305—54 4 Claims



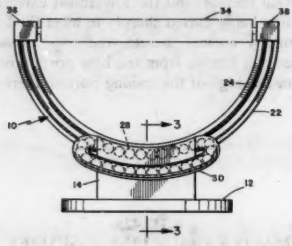
1. A master track link having an outer surface for receiving a track shoe and a transversely spaced opposite inner surface, comprising: two separable link parts with end portions defining longitudinally spaced apart pin connection means and bushing connection means respectively, the interface between said link parts substantially lying along a diagonal flat plane, each of the two diagonal flat surfaces forming said interface defining a cavity, said cavities combining together to define a common hollow space whose axis is generally perpendicular to said two diagonal flat surfaces, said cavities having a first interior wall in one link part the surface of which is disposed away from said flat surfaces and towards said inner surface and having a second interior wall in the other link part the surface of which is disposed away from said flat surfaces and toward said outer surface, that link part having said outer surface is defined as the outer link part and the other link part is defined as the inner link part, one end of the diagonal flat surface on said outer link part converges with the outer surface, the opposite end of the diagonal flat surface on said outer part is located between said outer surface and said inner surface, insertable pin means, complementary to said hollow space, for interlocking together said link parts, whereby said pin means is placed in shear whenever said link parts are pulled apart longitudinally, transversely and laterally; a track shoe displaced along said outer surface; and a bolt means, extending at least partially through said link parts and disposed generally perpendicular to said outer surface, for removably retaining said track shoe in place, whereby link parts are freely separable when said bolt means is removed and one link part is moved away from the other link part along a path generally to said first interior wall or said second interior wall.

4,332,426

RECIRCULATION BEARING FOR ROLLING ARC GIMBAL

John M. Speicher, Upland, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Oct. 27, 1980, Ser. No. 200,658
Int. Cl.³ F16C 11/00; F16M 11/12
U.S. Cl. 308—2 R 12 Claims



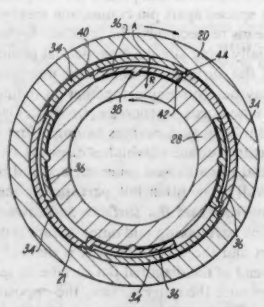
1. A rolling arc gimbal mount comprising:
a base adapted to be supported by a supporting structure;
an arcuate substantially semicircular yoke supported by recirculating bearing means in said base for rotation about its axis, said bearing means including rolling elements guided in a closed path having loaded and unloaded portions, said loaded portion being substantially arcuate; and
a platform pivotally mounted in said yoke for rotation about an axis orthogonal to the axis of rotation of the yoke.

4,332,427

AIR BEARING FOR USE WITH CONCENTRIC ROTARY SHAFTS IN MACHINES

Raymond F. Sargent, and John M. Hall, both of Bristol, England, assignors to Rolls-Royce Limited, London, England

Filed Jul. 14, 1980, Ser. No. 167,732
Claims priority, application United Kingdom, Aug. 4, 1979, 7927265
Int. Cl.³ F16C 32/06
U.S. Cl. 308—9 7 Claims



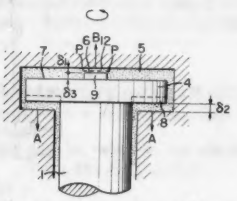
1. A machine having first and second concentric rotating shafts and including a fluid bearing comprising a plurality of resilient shells mounted on one of the shafts for rotation therewith and defining a plurality of surfaces confronting the other one of the shafts and spaced therefrom to define a tapering gap in which, in operation, a fluid film is formed, each of the resilient shells being of a thickness which, relative to its other dimensions is such as to prevent the shell from locally deflecting at unsupported positions in response to increases in the pressure of said fluid film, and load reacting members being mounted between each of the shells and the shaft on which they are mounted to provide, in response to increases in pressure in the fluid film, reaction loads at two locations on a shell on opposite sides of the resultant of the pressure in said film to bend each of the shells in the manner of a stiff beam to modify the shapes of the shells so that the bearing surfaces on the shells conform more closely to the surface of the shaft which they confront in the regions of minimum fluid film thickness, and wherein the shells are mounted on a portion of said one of the shafts which lies radially inwardly of said other one of the shafts and the bearing surfaces of the shells are formed on convex surfaces thereof to confront the internal surface of said other one of the two shafts.

4,332,428

ROTARY MECHANISM WITH AXIAL BEARINGS

Teruo Maruyama, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 4, 1980, Ser. No. 109,491
Claims priority, application Japan, Jan. 16, 1979, 54-3701; Mar. 14, 1979, 54-30343; Jul. 31, 1979, 54-98217
Int. Cl.³ F16C 39/06
U.S. Cl. 308—10 8 Claims



1. A rotary mechanism with axial bearing means characterized by the provision of
(a) a shaft having at least one free end;
(b) a housing rotatably fitted over said shaft with a lubricant interposed therebetween;
(c) a first axial position control means comprising a first thrust axial bearing means comprising
a projection extended from the free end of said shaft or from the opposing bearing surface of said housing in opposed relationship with said free end of said shaft and functioning in such a manner that the clearance between the end face of said projection and its opposing bearing surface tends to be increased, and grooves formed from the radially inner side to the radially outer side in said end face of said projection or said opposing bearing surface of said housing; and
(d) a second axial position control means which is so designed and constructed that the force may be produced which tends to reduce the clearance between said projection and its opposing bearing surface.

4,332,429

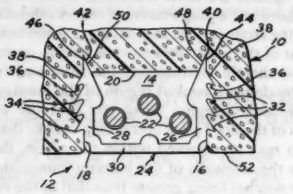
HOUSEHOLD REFRIGERATOR AND METHOD OF CONSTRUCTION

William C. Frick, Louisville, Ky., and John M. Powell, Charlestown, Ind., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 3, 1979, Ser. No. 99,286
Int. Cl.³ A47B 77/08; H02G 3/00; F25D 23/08
U.S. Cl. 312—236 13 Claims

6. In a refrigerator cabinet having a rigid plastic foam member, an electrical wiring assembly comprising:
an open channel having opposite side walls and a bottom wall in the rigid plastic foam member;
electrical wires in the channel; and
at least one clip secured within the channel, said clip having two spaced legs with projections formed thereon and

gripping respectively the opposite side walls of the channel and a body member depending from the legs spanning



the open channel remote from the bottom wall and spaced from the electrical wires to confine and allow longitudinal movement of the wires within the channel.

4,332,430

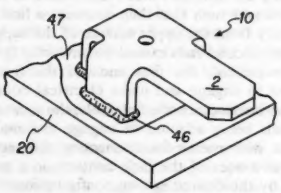
PRINTED CIRCUIT BOARD CONNECTOR

Paul R. Clark, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 88,739, Oct. 26, 1979, abandoned. This application Jan. 14, 1981, Ser. No. 225,080

Int. Cl.³ H01R *13/04*

U.S. Cl. 339—17 C **2 Claims**



1. A circuit board connector for mounting on a printed circuit board comprising:

a terminal means having a flat surface for mounting on a printed circuit board;

first and second mounting legs bent perpendicular to the flat surface and positioned in parallel alignment with each other;

an extension for receipt at a female spade terminal, the extension being positioned at right angles to the first and second mounting legs extending outward from the flat surface and, when mounted, positionable in parallel alignment with the printed circuit board, at an acute angle with the circuit board, or perpendicular with the printed circuit board;

stabilizing mounting leg means having the same shape as the first and second mounting legs for stabilizing the circuit board connector, and positioned on the opposite side of the terminal means from the extension; and

mounting means for mounting the terminal means directly above the printed circuit board and spaced sufficiently from the printed circuit board for the extension (when positioned in parallel alignment with the printed circuit board) to receive the female spade terminal; the mounting means includes on each of the first and second mounting legs and the stabilizing mounting leg means a mounting shoulder and a feed-through extension extending outward from the mounting shoulder, whereby, when the circuit board connector is mounted on the circuit board, the mounting shoulder will support the terminal means in parallel alignment with the circuit board, and separate it therefrom by a distance established by the mounting shoulders.

4,332,431

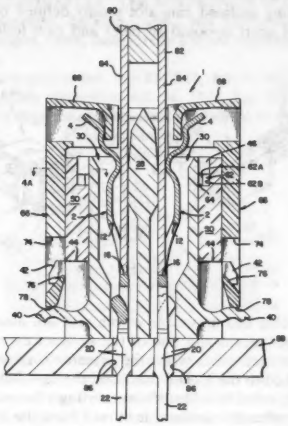
PREASSEMBLED ELECTRICAL CONNECTOR

Clifford F. Bobb, Carlisle, and Robert F. Cobaugh, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 105,046, Dec. 18, 1979, abandoned. This application May 26, 1981, Ser. No. 267,098

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—74 R **12 Claims**



1. A preassembled electrical connector, comprising:

a rigid dielectric housing having one or more rows of cavities,

a row of elongated leaf spring terminals lockingly retained in each said row of cavities,

said housing provided with one or more receptacle openings into which circuit path conductors are pluggably inserted and into which the terminals project for frictional and electrical engagement with said conductors,

fulcrum means on said housing,

a dielectric shroud pivotally connected to said fulcrum means,

means for pivoting said shroud about said fulcrum means,

said shroud being hooked over a corresponding row of said terminals, and, upon pivoting about said fulcrum means, resiliently deflecting said terminals away from said one or more receptacle openings, permitting insertion of said conductors into said openings with reduced frictional engagement by said terminals, and

resilient means on said housing for urging said shroud into pivotal engagement with said fulcrum means.

4,332,432

LOW INSERTION FORCE CONNECTOR ASSEMBLY

Stephen A. Colleran, Plainfield, Ill., assignor to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 966,897, Dec. 6, 1978, abandoned. This application Jan. 25, 1980, Ser. No. 115,332

Int. Cl.³ H01R *13/629*

U.S. Cl. 339—75 M **9 Claims**

1. In a connector assembly including

a first housing,

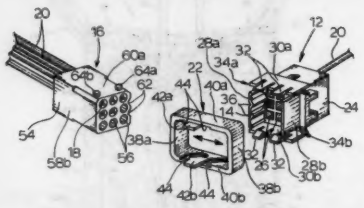
a second housing received within said first housing and moveable in a first direction toward and away therefrom between an initial position and a fully inserted position, and

at least one pair of terminals, one being mounted in the first housing and the other terminal being mounted in the second housing, said pair of terminals having aligned longitudinal axes, each terminal having a mating portion

engaging the mating portion of the other terminal when said terminals of said pair are axially moved toward each other in response to movement of the housings to the fully inserted position, the improvement comprising:

an actuator member mounted on one of the housings for reciprocal and linear movement in a second direction generally transverse to said first direction between an unlocked position and a locked position; and

interengaging cam means associated between the other of said housings and said actuator member, said cam means including inclined cam slot means defined between two spaced apart opposed surfaces and cam follower means



receivable and moveable within said slot means, the cam follower means and one of the surfaces exerting a force against each other when the actuator is moved from the unlocked to the locked positions, the cam follower means and the other of said surfaces exerting a force against each other when the actuator is moved from the locked to the unlocked position, whereby said housings are moved between said initial and inserted positions when said actuator member is moved between the unlocked and locked positions, said cam means including a locking portion to prevent the housings from moving from the inserted position to the initial position except by movement of the actuator member from the locked position.

4,332,433

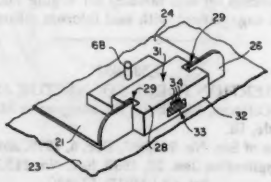
TERMINATION OF FLAT FLEXIBLE CABLES

John W. Balde, Flemington, N.J.; Robert A. Spencer, Indianapolis, and Richard K. Thompson, Jr., Carmel, both of Ind., assignors to Western Electric Co., Inc., New York, N.Y. and Bell Telephone Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 928,930, Jul. 28, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 135,401

Int. Cl.³ H01R *13/38*

U.S. Cl. 339—99 R **8 Claims**



1. A connector for use in an undercarpet telephone wiring system for interconnecting one of a plurality of contacts of a plug with one of the conductors of one or more flat flexible cables, the number of cables and the interconnection pattern between the plug contacts and the flat cable conductors being determined in accordance with a desired system configuration, the system including a floor plate having a substantially flat, first face suitable for attachment to a floor and an oppositely-facing, parallel, flat second face for supporting the connector, the second face having an upstanding wall with a recess therein for receiving a portion of the connector, which connector comprises:

(a) a dielectric, plug-receiving housing having front and rear faces, spaced sidewalls extending between the front and rear faces and a plug-receiving recess extending inwardly from the front surface and having a shape complimentary to that of the plug, the sidewalls having opposed notches formed therein intermediate the front and rear faces to thereby define a necked region of the housing, the width of the necked region being less than the width of the recess of the floor plate upstanding wall so that the necked region may be received within the recess, the width between the sidewalls of the housing immediately adjacent to the notches being greater than that of the recess so that portions of the upstanding wall on either side of the recess may be captured within the notches when the connector is supported on the floor plate to thereby prevent substantial inward or outward movement of the connector;

(b) a plurality of jack contacts mounted within the plug-receiving recess, the jack contacts being adapted to engage and make electrical contact with respective ones of the plug contacts;

(c) a dielectric, support member extending rearwardly from the rear face of the housing and connected thereto and having a flat upper surface for receiving a flat flexible cable and a spaced lower surface; and

(d) a plurality of conductive terminals equal in number to the number of jack contacts and having first and second ends, the terminals being mounted in the support member such that they are normally electrically isolated from the jack contacts and such that their respective first ends extend upwardly from the upper surface of the support member and their second ends extend downwardly from the lower surface thereof, the first ends of the terminals being adapted to engage and make electrical contact with respective conductors of a flat cable, the second ends of the terminals being adapted to engage and make electrical contact with means for connecting the second ends to respective ones of the jack contacts in a pattern determined by the desired system configuration.

4,332,434

ELECTRIC TERMINAL AND ASSEMBLY CONTAINING SAME

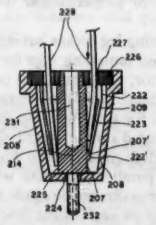
Rudolf Neidecker, Basel, Switzerland, and Bernd Rüsing, Heiligenhaus, Fed. Rep. of Germany, assignors to Multi-Contact AG, Allschwil, Switzerland

Filed Jan. 9, 1980, Ser. No. 110,602

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1979, 2901201

Int. Cl.³ H01R *9/12*

U.S. Cl. 339—258 R **8 Claims**



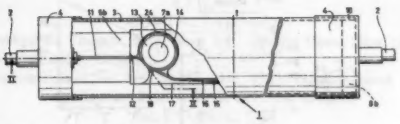
1. An electrical terminal for a multiplicity of conductors, especially for breadboarding and the like comprising means forming an annular groove adapted to accommodate a plurality of conductors and having an inner and outer wall, and including an annular spring member constituted of electrically conductive material and provided with a plurality of elements adapted to resiliently engage said conductors, said elements

bearing on one of said walls, said outer wall generally being cup-shaped and said inner wall being formed as a post disposed centrally in the cup formed by the outer wall, said post being unitary with an insulating support forming said cup and being provided with a head having an undercut engaging an edge of said spring member.

4,332,435
GLASS FIBRE CABLE JUNCTION BOX

Jan Post, Nieuwegein; Netherlands, assignor to N.K.F. Groep B.V., Netherlands

Filed Dec. 14, 1979, Ser. No. 103,656
Claims priority, application Netherlands, Jan. 19, 1979, 7900432
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 4 Claims



1. A junction box for connecting the ends of two optical cables, each cable comprising at least one optical fiber for conducting light signals, said junction box having space for storing spare lengths of optical fiber and having a guide for accommodating a splice of the ends of two optical fibers, characterized in that the junction box comprises an assembly of stacked, elongate, flat holders, one holder for the ends of each pair of optical fibers to be coupled, said holders each comprising:

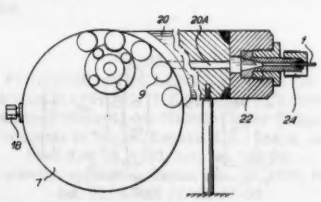
a recess for accommodating a splice between the fibers to be coupled; and

two storage spaces, one on either side of the recess, each space for loosely accommodating a spare length of an optical fiber, said storage spaces each having an inner diameter at least equal to twice the minimum radius of curvature of the optical fibers to be spliced.

4,332,436
METHOD AND APPARATUS FOR CONSTRUCTING AN OPTICAL FIBER CABLE WHICH IS RESISTANT TO HIGH TEMPERATURES AND IS PERFECTLY WATERTIGHT, AND CABLE PRODUCED BY SUCH PROCESS

Napoleone Adorni, and Pier L. Pizzolati, both of Milan, Italy, assignors to Cise S.p.A., Milan, Italy

Filed Jan. 8, 1980, Ser. No. 110,367
Claims priority, application Italy, Jan. 8, 1979, 9310 A/79
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.23 12 Claims



1. A process for the production of a sheathed optical fiber cable comprising the steps of:

providing a metallic tube to form the sheath of said cable, said tube being of a length corresponding to the desired cable length;

holding said tube;

positioning a first portion of said optical fiber within a first portion of said tube; and

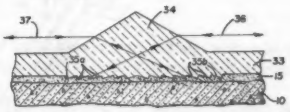
providing a flow of fluid around said optical fiber and within said tube to exert a progressive entrainment of the optical fiber within said tube.

11. The optical fiber cable produced by the process of claim 1.

4,332,437
RETROREFLECTIVE MARKING TAPE

Charles E. Searight, Jackson, Miss., and James H. Heasley, Shaker Heights, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 812,851, Jul. 5, 1977, Pat. No. 4,182,548. This application Jul. 30, 1979, Ser. No. 61,617
The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.
Int. Cl.³ G02B 5/124
U.S. Cl. 350—103 12 Claims

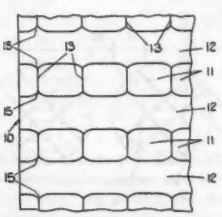


1. A retroreflective marking material, effective whether wet or dry, comprising a light-transmitting sheet having one side adapted to be exposed to and refract incident light and an opposite side adapted to be directly adhered to a support or the like, said opposite side having a plurality of trihedral light-reflecting units having three mutually perpendicular facets, said units comprising triangular-based pyramids having their optical axes disposed within 15 degrees of the direction of the light refracted by said one side, said one side being adapted to direct said refracted, incident light through said sheet to said pyramidal units, and said units being adapted to retroreflect said light back through said sheet and away from said one side in a direction substantially parallel to said original incident light.

4,332,438
LENS ELEMENT

Stanley Green, Warley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 7, 1980, Ser. No. 128,226
Claims priority, application United Kingdom, Mar. 23, 1979, 7910325
Int. Cl.³ G02B 3/08; F21V 5/04
U.S. Cl. 350—167 7 Claims



1. A lens element in the form of a moulded body, a plurality of parallel rows of projections on one face of said moulded body and a plurality of ribs on said one face of said body, said ribs being parallel to said parallel rows of projections, each of said projections having the form of part of a body of revolution or having a cylindrical mid-region and end regions which each

have the form of part of the body of revolution of a transverse section of the mid-region, the length of each said rib being greater than the corresponding dimension of each said projection, and at least one of said ribs being disposed between at least one pair of adjacent rows of said projections.

4,332,439

METHOD OF PRODUCING A LIGHT CONDUCTOR

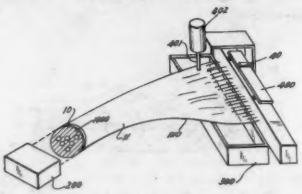
Dietrich W. Lübbers, Dortmund, and Friedbert Hannebauer, Bochum, both of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft zur Förderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 60,846

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832880

Int. Cl.[3] G02B *5/14, 5/17*

U.S. Cl. 350—320 3 Claims



1. A method for the production of a light conductor having opposite ends and composed of a plurality of thin fibers, wherein at least one of said ends is divided into a plurality of strands and wherein each strand of said one end comprises fibers of a specific one of a plurality of regions at the other end arranged in any desired pattern, said method comprising the steps of producing at said other end an illuminated pattern of any desired outline so that some of the fibers will be light carrying fibers and the other non-light carrying fibers; displacing said light carrying fibers and said non-light carrying fibers with respect to each other by a photoelectric control rod punch; and connecting said light carrying fibers, respectively said non-light carrying fibers into said separate strands.

4,332,440

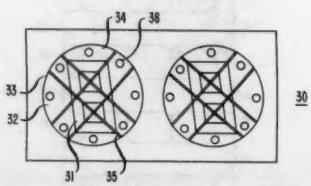
STRUCTURE OF DISPLAY DEVICES

Mauro DiDomenico, Jr., Bernardsville; Shobha Singh, Summit, and LeGrand G. Van Uitert, Morristown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 17, 1980, Ser. No. 131,080

Int. Cl.[3] G02F *1/17*

U.S. Cl. 350—357 9 Claims



1. A display device comprising electrodes comprising transparent conducting material, display elements forming at least one character electrolyte comprising organic solvent and dissolved salt and active material, in which the active material changes color in response to an electrical signal and the active material consists essentially of at least one organic quinone selected from the group consisting of 2-tertiary butylanthraquinone, 2-ethylanthraquinone and benz[α]anthracene-7,12 dione characterized in that the electrolyte in said at least one character of the display device is separated into a plurality of separate cells by electrical insulator material so that electrical signal originating in one cell remains in that cell.

4,332,441

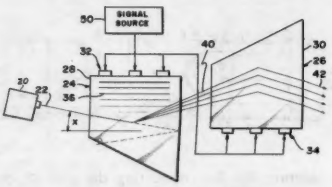
COHERENTLY PULSED LASER SOURCE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Jack S. Margolis, Pasadena, Calif.

Filed May 15, 1980, Ser. No. 150,040

Int. Cl.[3] G02F *1/32*

U.S. Cl. 350—358 7 Claims



1. Apparatus for generating modulated optical radiation comprising:

a source of continuous coherent optical radiation;

first and second diffraction devices, each device including an optical element which is transparent to the passage of optical radiation from said source, and each device also including a sound transducer coupled to the optical element to pass sound waves therethrough; and

a signal source which generates signals of a plurality of frequencies, said signal source coupled to said transducers to energize each of them with the same signals;

said source and diffraction devices positioned so that radiation from said source passes into said first device and the radiation emanating from said first device passes into said second device.

4,332,442

REPRODUCING OBJECTIVE FOR VIDEO DISKS

Kaneyas Ookawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

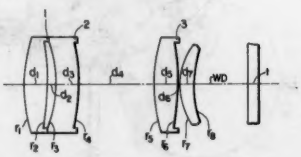
Filed Apr. 23, 1980, Ser. No. 143,123

Claims priority, application Japan, May 4, 1979, 54-55019

The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.

Int. Cl.[3] G02B *9/34*

U.S. Cl. 350—469 15 Claims



1. A reproducing objective for video disks comprising a first, second, third and fourth lenses in the order from the reproducing light source side to the video disk side, said first lens being a positive lens, said second lens being a negative meniscus lens, said third lens being a positive lens, said fourth lens being a positive meniscus lens, at least one of said lenses being ar-

ranged as a plastic lens, said reproducing objective for video disks fulfilling the following conditions:

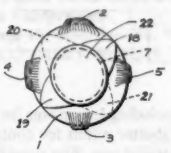
(1) $2.1f<f_1<3.2f$
(2) $-55f<f_2<-3.9f$
(3) $1.3f<f_4<2.4f$
(4) $f<r_8<2.3f$
(5) $d_2<0.1f$
(6) $0.5f<d_4$

wherein reference symbols f_1, f_2 and f_4 respectively represent focal lengths of the first, second and fourth lenses, reference symbol r_8 represents the radius of curvature of surface on the video disk side of the fourth lens, reference symbol d_2 represents the airspace between the first and second lenses, reference symbol d_4 represents the airspace between the second and third lenses, and reference symbol f represents the focal length of the lens system as a whole.

4,332,443
CONTACT LENSES

Penrhyn F. Thomas, 5 N. Arm Rd., Middle Cove, New South Wales, 2068, Australia

Continuation of Ser. No. 24,787, Mar. 29, 1979, abandoned. This application Feb. 4, 1981, Ser. No. 231,544
Int. Cl.³ G02C 7/04
U.S. Cl. 351—160 H **4 Claims**



1. A soft hydrophilic plastic corneal contact lens consisting essentially of a substantially circular optical correction zone which is shaped for the correction of astigmatism,

said lens being soft enough to tend to conform to the shape of the cornea when placed on an eye with corneal astigmatism,

at least one discrete lug or flange extending from the periphery of said correction zone, said lug being composed of said soft hydrophilic plastic,

said lug having a radial width measured from the periphery of said correction zone which is less than the radius of said correction zone,

said lug having a limited dimension around the circumference of the lens to engage only that portion of the sclera of the eye adjacent to the cornea at one of the depressions on the eyeball formed between the four rectus muscles attached to the sclera of the eye to thereby prevent rotation of the lens to maintain the required astigmatism correction.

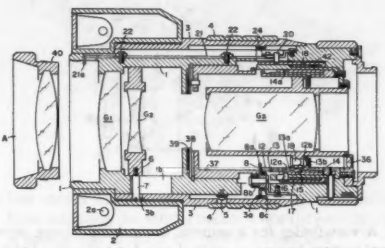
4,332,444
PHOTOGRAPHIC LENS CAPABLE OF PHOTOGRAPHING THE MAGNIFICATIONS

Hideyo Nozawa, Ohmiya, and Hideshi Naito, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,161
Claims priority, application Japan, Jun. 29, 1979, 54/82187
Int. Cl.³ G03B 17/48, 17/00
U.S. Cl. 354—79 **6 Claims**

1. In a photographic lens having a main image forming optical system including operating means and focusing means operated thereby to be moved in the direction of the optical axis so that magnification of an object image formed by the main image forming optical system may be varied; the lens being capable of mounting in association therewith another optical system including optical means for converting magnification of said image, the improvement comprising:

(a) display means selectively having a first display mode in which magnification of said image attained by said main image forming optical system is displayed in response to variation in the magnification, and a second display mode in which magnification of said image attained in combination of said other optical system with said main image forming optical system is displayed in response to variation in the magnification;



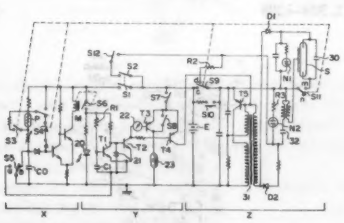
(b) means for detecting the mounting of said other optical system on the main image forming optical system; and

(c) means for replacing said display modes in response to the detecting means.

4,332,445
FLASH LIGHT DISCHARGE TUBE CONTROL DEVICE

Tsutomu Hosono, Tokyo, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Continuation of Ser. No. 788,465, Apr. 18, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,615
Claims priority, application Japan, Apr. 16, 1976, 51-43317
Int. Cl.³ G03B 17/24, 15/05
U.S. Cl. 354—106 **5 Claims**



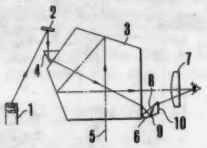
1. In a photographic camera provided with an electronic flash light device including a capacitor used for discharging an electronic flash light tube, and an oscillator for charging the capacitor and an additional electrically operated data printing device wherein a single power source is commonly used for energizing the electronic flash light device and the data printing device; the combination including a device for controlling the flash light tube comprising means for turning off the oscillator to stop the charging of the capacitor at least for the period from the discharging of the flash light tube to the completion of the operation of said data printing device.

4,332,446

VIEW FINDER FOR CAMERA

Youichi Okuno, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1980, Ser. No. 162,490
Claims priority, application Japan, Jun. 29, 1979, 54-82276
Int. Cl.³ G03B 13/08, 17/20
U.S. Cl. 354—155 2 Claims



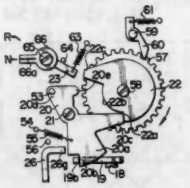
1. A viewfinder for a camera, comprising an eye piece, an optical system having an optical axis for reflecting light from within a certain viewfield toward said eye piece, means for directing light from outside said certain viewfield through said optical system at a given angle relative to said optical axis, a sub prism arranged relative to said optical system and outside a path of the light from within a certain viewfield toward said eye piece for directing the light from outside said certain viewfield which passes through said optical system at said given angle toward said eye piece, said sub prism having a light incident plane, a light reflecting plane and a light emitting plane arranged so that the light from outside the viewfield which passes through said optical system enters said sub prism through said light incident plane and is reflected from said light reflecting plane toward said light incident plane to be substantially totally reflected by said light incident plane toward said light emitting plane to leave said sub prism.

4,332,447

ELECTROMAGNETIC SHUTTER APPARATUS FOR CAMERA

Katsuhiko Tsunefuji, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Division of Ser. No. 892,732, Apr. 3, 1978, Pat. No. 4,171,156.
This application Sep. 4, 1979, Ser. No. 72,019
Claims priority, application Japan, Apr. 4, 1977, 52-39242; Apr. 20, 1977, 52-45567; Apr. 20, 1977, 52-45568; Apr. 20, 1977, 52-45569
Int. Cl.³ G03B 19/02
U.S. Cl. 354—209 6 Claims



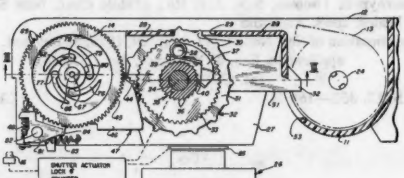
1. A multiple exposure apparatus for an electromagnetic shutter apparatus for camera including a shutter drive and control circuit which energizes a shutter drive coil in response to a shutter release operation to open a shutter by the electromagnetic interaction between the coil and a permanent magnet and in which an exposure period is automatically controlled by a time constant circuit including a photometric, light receiving element; the multiple exposure apparatus comprising a shutter drive member including the shutter drive coil and adapted to oscillate in response to the electromagnetic interaction between the coil and the permanent magnet to open the shutter, a detent member normally preventing a film winding operation by an associated film winding mechanism and becoming operative as the drive member opens the shutter to permit a film winding operation and to prevent a subsequent shutter release operation, a constraining member engageable with the detent member by an external operation to prevent the detent member from permitting a film winding operation, and a returning member interlocked with a film winding mechanism to return the detent member to its initial position upon termination of a film winding operation.

4,332,448

FILM WINDING SAFETY MECHANISM

Arthur Zawodny, Budd Lake, N.J., assignor to Keystone Camera Corporation, Clifton, N.J.

Filed Nov. 17, 1980, Ser. No. 207,672
Int. Cl.³ G03B 1/00, 17/26
U.S. Cl. 354—213 8 Claims



8. In a camera including lens means for projecting an image to an image area, shutter means for controlling projection of said image to said image area, film supply means, film take-up means, and film advancing means coupled to said take-up means and operable for advancing film through said image area from said supply means to said take-up means, a sprocket wheel engageable with the film and rotatable by the film during operation of said film advancing means, a one-way clutch, a rotatable metering element coupled to said sprocket wheel through said one-way clutch and operative to allow rotation of said sprocket wheel through only a predetermined angle in response to operation of said film advancing means, said one-way clutch being operable to a disengaged condition to allow rotation of said sprocket wheel in a reverse direction during film rewind, and safety means coupled to said metering element and to said shutter means for allowing operation of said shutter means only after actuation of said film metering means by said film through said sprocket wheel and said one-way clutch.

4,332,449

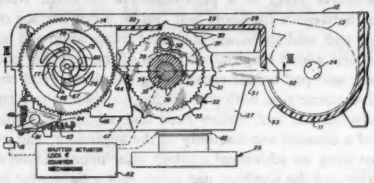
FILM ADVANCE AND REWIND MECHANISM

Arthur Zawodny, Budd Lake, and Jerzy Krysicki, Passaic, both of N.J., assignors to Keystone Camera Corporation, Clifton, N.J.

Filed Nov. 17, 1980, Ser. No. 207,671
Int. Cl.³ G03B 1/00, 17/26
U.S. Cl. 354—214 7 Claims

7. In a camera including means for journalling supply and take-up spool means, film advance means for driving said take-up spool means to move film in an advancing direction from said supply spool means to said take-up spool means, and film rewind means for driving said supply spool means to move film back in a rewind direction from said take-up spool means to said supply spool means, said film-advance means comprising: engagement means comprising a wheel having a peripheral surface for engagement by a finger of a user to effect rotation thereof in one direction, and coupling means between said engagement means and said take-up spool means, said coupling means being normally in a first condition in which

said take-up spool means is decoupled from said engagement means for allowing movement of the film in said rewind direction, and said coupling means being operable to a second condition in response to operation of said engagement means to rotate said take-up spool means and to move the film in said



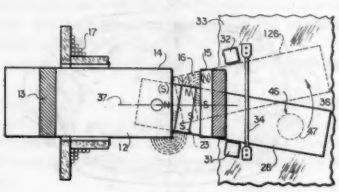
advancing direction, means for limiting rotation of said engagement wheel in a direction opposite said one direction, shutter actuating means, and one-way clutch means coupling said take-up spool means to said shutter actuating means for operation of said shutter means in response to rotation of said take-up spool means in a film-advancing direction.

4,332,450

MAGNETIC ACTUATION METHODS AND APPARATUS

Gerald W. Griffith, Tustin, Calif., assignor to James Dole Corporation, Fountain Valley, Calif.

Filed Sep. 15, 1980, Ser. No. 187,272
Int. Cl.³ G03B *9/10*; H01F *7/14*
U.S. Cl. 354—234 **31 Claims**



1. In a magnetic actuation method, the improvement comprising in combination the steps of:

providing a first magnetic field in an air gap;

providing in said air gap a magnet having a second magnetic field at an angle to and interacting with said first magnetic field;

locating a pivot axis for said magnet laterally and entirely outside of said air gap;

distorting said air gap at a boundary thereof for imposing a unidirectional retention force on said magnet; and

displacing with said interacting first and second magnetic fields said magnet in said air gap about said laterally located pivot axis.

4,332,451

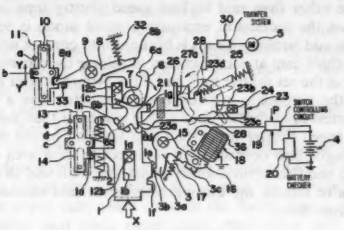
RELEASE SAFETY SHUTTER INTERLOCK FOR BATTERY POWERED CAMERA

Hirokazu Ichii, Iwatsuki, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1980, Ser. No. 200,656
Claims priority, application Japan, Oct. 30, 1979, 54-140792
Int. Cl.³ G03B *9/08, 17/38, 19/02*
U.S. Cl. 354—234 **9 Claims**

1. A shutter release controlling apparatus for a self-developing instant camera provided with a shutter means including a manually operable shutter button for regulating the exposure of a self-developing film unit having treating liquid, and a motor means energizable by a battery for driving a spreader means to spread the treating liquid across the film unit for development subsequent to the exposure, and for ejecting the self-developed film unit out of the camera, said apparatus comprising in combination:

a releasing member means responsive to shutter button movement for actuating the shutter means,



a first means for preventing the releasing member means from actuating the shutter means when the battery voltage is insufficient to drive the motor means, and

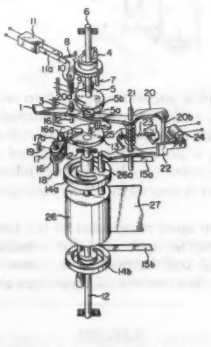
a second means for preventing the releasing member means from actuating the shutter means during the driving operation of the motor means for the spreader means.

4,332,452

ELECTRIC SHUTTER FOR CAMERA

Yoshiyuki Nakano, and Etsuo Tanaka, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 11, 1980, Ser. No. 215,343
Claims priority, application Japan, Dec. 20, 1979, 54-164700
Int. Cl.³ G03B *9/32, 9/62*
U.S. Cl. 354—234 **6 Claims**



1. An electric shutter control device for a camera operable selectively with manual control mode in which the shutter time is set manually or with automatic exposure control mode in which a proper shutter time is set automatically, said electric shutter control device comprising:

a member for opening the shutter in response to a shutter releasing operation;

a member for closing the shutter;

a control cam adapted to start moving in accordance with the shutter releasing operation and which is composed of, at least, a first cam area, a second cam area and a third cam area;

means for latching the closing member and so disposed as to come into contact with said first area, second area and third area of said cam;

an electromagnetic device for attracting said latching means to prevent the contact between said control cam and latching means; and

said electromagnetic device controlling said latching means in such manner that when the manual control mode is

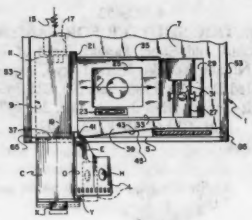
selected and the highest speed shutter time is set, then said latching means is brought into contact with said third cam area after contacted with said first cam area to release the closing member at the highest speed shutter time and that when the manual control mode is selected and a shutter time other than said highest speed shutter time is set or when the automatic exposure control mode is selected, then said latching means is brought into contact with only the third cam area of said cam to release the closing member at the set shutter time and if the proper shutter time set by the automatic control mode is shorter than a certain shortest limit shutter time which is shorter than said highest speed shutter time, then said latching means is firstly brought into contact with said second cam area of said cam and then continuously contacted with said third cam area to release the closing member at said shortest limit shutter time.

4,332,453

FILM LOADING APPARATUS

Neil G. Seely, Rochester, and David C. Smart, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1981, Ser. No. 260,875
Int. Cl.³ G03B *17/02, 1/00*
U.S. Cl. 354—288 **10 Claims**



1. In photographic apparatus adapted to receive a film container supporting a filmstrip having a normally curled leader extending from the container, the improvement comprising:

means defining a film passageway adapted to receive a substantially uncurled film leader longitudinal edge first as a film container is moved into said photographic apparatus; and

means, effective upon movement of the film container into said photographic apparatus, for substantially uncurling the film leader and for guiding the uncurled leader longitudinal edge first toward said passageway.

4,332,454

ASSEMBLY FOR PROCESSING A PHOTOSENSITIVE MATERIAL

Roy Hensel, Cranbury; Leonhard F. Biller, Basking Ridge, and Russell J. Danson, Millington, all of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Jan. 9, 1981, Ser. No. 223,610
Int. Cl.³ G03B *5/06*
U.S. Cl. 354—317 **9 Claims**

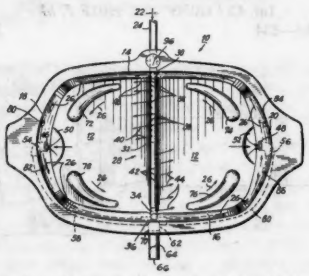
1. An applicator assembly for processing a photosensitive material with a developer liquid, having an oscillating applicator supporting and contacting an open-celled scrubber pad, said applicator being provided with perforations through which the developer liquid under pressure is directed outwardly to penetrate said scrubber pad to wet and to process a photosensitive layer of a photosensitive material, which is inserted between a transport belt and an outer surface of the scrubber pad, said applicator assembly comprising: pad holder rods around which longitudinal edges of the scrubber pad are wrapped; said pad holder rods having shouldered rod ends in operative connection with rod holders to clamp the scrubber pad between the pad holder rods and angular longitudinal edges of a channel sub-assembly of the applicator; and means for providing an additional contact attachment between the applicator and the scrubber pad to prevent a tightening of the scrubber pad during the oscillating movement of the applicator assembly transverse to the guide motion of the photosensitive material advanced by the transport belt.

4,332,455

ARCHIVAL PRINT AND FILM WASHER

Louis J. Stettner, 172 W. 79th St., New York, N.Y. 10024

Filed May 12, 1980, Ser. No. 148,956
Int. Cl.³ G03D *3/02*
U.S. Cl. 354—324 **20 Claims**



1. A washer for washing photographic sheet material, comprising:

(a) a basin having an interior compartment for containing the photographic material to be washed, said interior compartment being bounded by an inner circumferential surface surrounding the photographic material,

(b) washer liquid supply means for introducing a continuous stream of washer liquid under pressure to the interior compartment of the basin, to generate therein a hydrodynamic, generally horizontal, circumferentially-extending, generally laminar liquid flow,

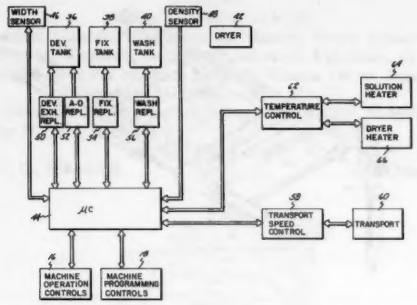
said washer liquid supply means including liquid inlet means in fluid communication with the interior compartment of the basin, and operative for continuously admitting washer liquid therein in a generally circumferential direction for washing the photographic material, said washer liquid supply means further including a continuous foraminous pipe which extends centrally in the interior compartment generally transverse to a portion of the inner surface, one half of the pipe having foramina which face generally horizontally in one direction, and the other half of the pipe having foramina which face generally horizontally in a direction opposite to the one direction, ech half of the pipe having a continuous generally horizontal component and a generally vertical component, and

(c) washer liquid discharge means for discharging spent washer liquid from the interior compartment of the basin.

4,332,456
GRAPHIC ARTS PROCESSOR HAVING SWITCH SELECTABLE REPLENISHMENT CONTROL INFORMATION MATRICES

Kenneth M. Kaufmann, Minneapolis, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Jul. 14, 1980, Ser. No. 167,834
Int. Cl.³ G03D *3/00*
U.S. Cl. 354—298 **15 Claims**



1. In a processor of photosensitive material, an improvement comprising:

storage means for storing a plurality of information matrices for a plurality of different photosensitive materials, each information matrix including replenishment control information, and an indication of whether the photosensitive material is film or paper;

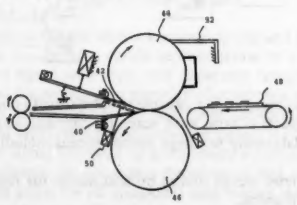
select means for selecting one of the information matrices; and

replenishment control means for providing replenishment of processor fluid as a function of the replenishment control information from the selected information matrix and the indication of whether the photosensitive material is film or paper.

4,332,457
FIXING DEVICE FOR FIXING IMAGES OF AN ORIGINAL DOCUMENT ON PLAIN PAPER COPY SHEETS

Akira Mitsuyama; Tadaaki Kawano, both of Nara; Tutomu Kato, Yamatokoriyama; Masanobu Deguchi, Yamatotakada, and Ituro Katoh, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 897,704, Apr. 19, 1978, abandoned. This application Jul. 2, 1980, Ser. No. 165,340
Claims priority, application Japan, Apr. 22, 1977, 52/47038
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 FU **5 Claims**



2. In an electrostatic plain paper copier wherein charging and light exposure is carried through onto a light-sensitive member to form an electrostatic latent image being developed in the form of a toner image through a developing station including a magnetic brush, said toner image being transferred onto a plain copy sheet and fixed to said plain paper copy sheet via a fixing device and further comprising:

toner used as a developing agent in said developing station comprising a flowable, pressure-fixable dry powder containing magnetite and having a resistance value greater than or equal to 10^{13} ohm/cm;

said fixing device comprising a pair of pressure roller means for firmly pressing said imaged toner onto the plain copy sheet thereby fixedly securing said toner to said plain paper copy sheet;

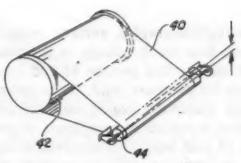
a copy sheet stripping device for scraping the plain paper copy sheet adhered to the fixing device; and

means for pressing said copy sheet stripping device against said fixing device only in synchronization with an output from a first sensing means for sensing the approach of a plain paper copy sheet towards the fixing device and for scraping said plain paper copy sheet from said fixing device when said toner image is transferred to said plain paper copy sheet and for spacing said copy sheet stripping device apart from said fixing device in synchronization with an output from a second sensing means for sensing the completion of the scraping of said plain paper copy sheet from said fixing device and during periods of time when no copy sheet is being processed through said fixing device.

4,332,458
TABLE TOP COPY MACHINE

Lionel B. Hoffman, Wykoff, N.J., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 947,873, Oct. 2, 1978, abandoned. This application Jul. 7, 1980, Ser. No. 165,998
Int. Cl.³ G03G *15/00;* **B65H** *17/12*
U.S. Cl. 355—3 BE **8 Claims**



6. In an electrophotocopy machine for reproducing a copy of an original document onto a copy sheet by transferring a toner image from a photoreceptor to said copy sheet, the improvement comprising

a first roller,

a second roller having a diameter smaller than said first roller,

a photoreceptor belt movably mounted on said rollers for traveling in a predetermined path, and said rollers having their axes continuously angularly displaced relative to one another during copying operation, thereby urging the photoreceptor belt to move laterally in a predetermined direction toward one end of said rollers as the photoreceptor belt moves along its predetermined path.

4,332,459
PLATE MAKING ATTACHMENT FOR GRAPHIC ART CAMERAS

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Continuation of Ser. No. 964,203, Nov. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 802,572, Jun. 1, 1977, abandoned. This application Sep. 10, 1980, Ser. No. 185,687
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 BE **36 Claims**

15. A printing plate making attachment for use operably

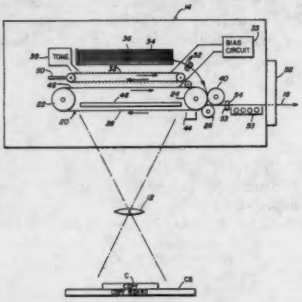
coupled as a unit to a graphic art camera that has structure for projecting a light image to an image plane at the rear of the camera and exposing such plane to such image for a predetermined period of time, said attachment comprising:

a. a rotatable endless electrophotographic belt comprising an outwardly facing electrophotographic portion having film and defining a first planar reach and proximate the image plane and a second planar reach disposed in a plane generally parallel to the first planar reach and juxtaposed thereover;

b. means for controlled rotation of the endless belt through one full revolution for completion of one cycle at least including charging, toning and transfer for each full revolution;

c. means proximate said first reach for charging said electrophotographic surface portion;

d. platen means disposed along the first reach between said reaches and having a surface exactly in the image plane conforming thereto and having means accurately to locate



the electrophotographic surface portion at a location along said first reach exactly in the image plane and to hold the said surface portion at said location securely in said plane for exposure, said platen means further including means positively urging said endless belt from said plane after exposure is completed to permit subsequent rotation of said belt with same carrying a latent image carried by said electrophotographic surface portion toward the second reach;

e. toner supply and dispensing means for applying toner to the surface portion after it passes through the first reach toward the said second reach for toning the latent image for subsequent transfer from the belt; and

f. transfer means for bringing plate material from a supply into close proximity with said toned image on the electrophotographic surface portion at a location at the terminal end of the second reach subsequent to the location whereat toner is applied whereby transfer of the toned image to said plate material is effected.

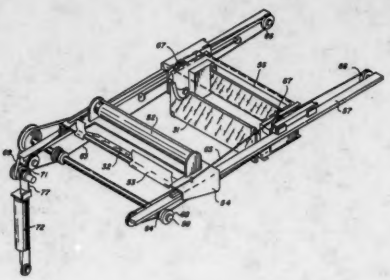
4,332,460

OPTICAL SCANNING CARRIAGE

Daniel W. Costanza, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1980, Ser. No. 155,869
Int. Cl.[3] G03G *15/28*; F16F *9/48*
U.S. Cl. 355—8 **7 Claims**

1. An optical scanning carriage, including drive means to move said carriage in a scanning direction and means to rapidly move said carriage in a rescan direction back to the start of scan position, dashpot means to decelerate the rate of return of the scanning carriage to the start of scan position, said dashpot comprising a cylinder having an end plate at one end, said end plate having a fixed size orifice therein, a piston slidably movable within the cylinder from a start of scan position adjacent the end plate to an end of scan position away from the end plate, the piston having a tapered metering pin mounted on its end, said metering pin being engagable with the orifice in the cylinder end plate, the end of said metering pin being spaced from the cylinder end plate when said carriage is in the end of scan position and being inserted in the orifice of said end plate when said carriage is in the start of scan position, said metering pin having a first portion of constant cross sectional shape and area and a second portion tapering from said constant cross sectional shape and area to a point at its end, said



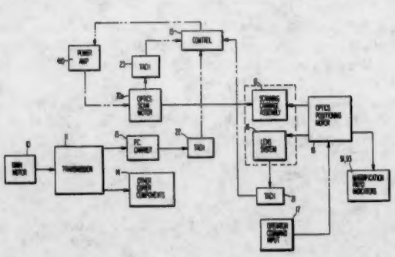
orifice having a shape and area slightly larger than the shape and area of said first portion of said metering pin whereby when said piston moves in the rescan direction said dashpot provides a triple mode of operation comprising a first maximum flyback velocity by the action of the piston and the orifice only, a second deceleration profile as the tapered metering pin enters the orifice in the end plate and a third minimum constant velocity when the constant shape and area portion of the metering pin enters the orifice in the end plate.

4,332,461

ELECTRICAL DRIVE FOR SCANNING OPTICS IN A CONTINUOUSLY VARIABLE REDUCTION COPIER

Norman Cail, Longmont; Raymond A. Daniels, Boulder; John B. Eggerling, Lyons, and Gerald B. Lammers, Boulder, all of Colo., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 6, 1979, Ser. No. 100,775
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 R **26 Claims**



21. A document copier capable of substantially continuously variable reduction ratio with scanning carriage means driven in servo relationship to image carrier means including:

a motor,

image carrier means driven by said motor for recording an image thereon,

scanning carriage means for scanning a document to be copied,

servo motor means for driving said scanning carriage means for scanning movement in synchronism with the motion of said image carrier means,

wherein said servo motor means includes:

deceleration means for decelerating said servo motor means when enabled,

means responsive to position of a scanning carriage in said scanning carriage means for disabling said deceleration means, and

position error means enabled on disablement of said deceleration means for driving said servo motor means in accordance with scanning carriage position error.

4,332,462

FEED CONTROL DEVICE

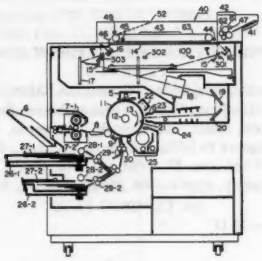
Toshiaki Yagasaki, Hino; Shunichi Masuda, Tokyo; Katsuichi Shimizu, Kunitachi, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1980, Ser. No. 151,677

Claims priority, application Japan, May 25, 1979, 54-64808; May 25, 1979, 54-64809

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **15 Claims**



1. A copying apparatus comprising

means for feeding originals;

means for exposing a fed original to light to copy said original;

optical detector means for detecting said original and for providing an output signal to control the copying operation; and

means for controlling the output signal from said detector means in response to a predetermined time signal to prevent the detector signal from being influenced by light from said exposure means which reaches said detector means.

4,332,463

NON-SYNCHRONOUS OPERATION OF AN ELECTRONIC COPIER

Ronald R. Firth, Fairport, and Lee N. Davy, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,543

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **18 Claims**

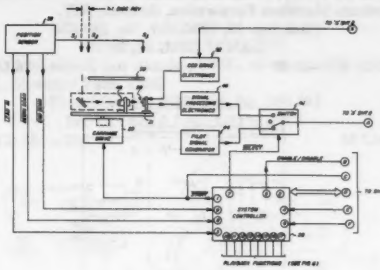
9. Apparatus for use with a memory device and a printer of a type that produces a visible representation of a document information signal on a copy, said apparatus comprising:

(a) means for producing a plurality of composite information signals corresponding to respective documents wherein each of said composite information signals is comprised of a pilot signal followed by a document information signal, and wherein the respective durations of said pilot signals are not equal for all composite information signals;

(b) means for recording said composite information signals on said memory device;

(c) playback means for playing back from said memory device a selected one of said composite information signals; and

(d) means, cooperative with said playback means, for adjusting the registration of document information on said copy by controlling printer operation in response to the termination of the pilot signal of the played composite information signal.



4,332,464

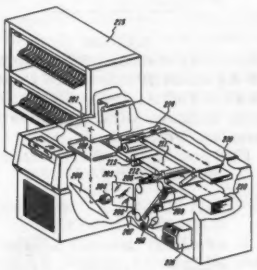
INTERACTIVE USER-MACHINE INTERFACE METHOD AND APPARATUS FOR COPIER/DUPLICATOR

Michael V. Bartulis, Torrance; Edwin J. Smura, Los Alamitos; Richard P. Dunn, Van Nuys; Herbert B. Bebb; Anthony J. Ciuffini, both of Palos Verdes Estates, and Lionel W. Mosing, Huntington Beach, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 22, 1980, Ser. No. 189,441

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 C **9 Claims**



1. A system for controlling a copying or printing system comprising:

video means for displaying orthographic and imaginal displays to the operator,

pointing means under operator control for determining a selected point on said video means, and for generating electrical signals which are a function of the location of said point on said video means,

sensors in said system to sense the system status,

drivers in said system to drive the system to a selected status,

means for generating displays on said video means in response to said signals and the system status sensed by said sensors and for commanding said drivers in response to said pointing means electrical signals and the system status sensed by said sensors,

wherein said means for generating is a computer comprising programs,

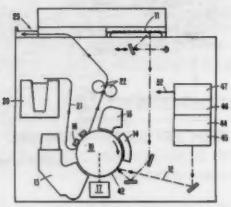
said system sensors include a measuring means for determining the size of the paper loaded in the paper tray, and

said means for generating, in response to said measuring means, produces a display for said video means to indicate the copy paper size.

4,332,465
BALANCED PHOTOCONDUCTOR USAGE CONTROL SYSTEM

Thomas D. Steury, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 23, 1980, Ser. No. 189,874
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 R 16 Claims



1. A balanced photoconductor usage control system for an electrophotographic copier/printer having a page buffer and an endless run of photoconductor containing thereon a plurality of page image areas, comprising:

memory means for designating a page image area as last-used in a print operation;

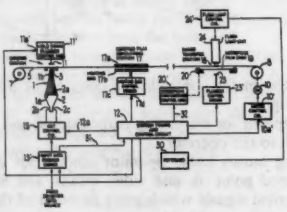
identification means for determining which page image area is immediately available for printing; and

control means jointly responsive to a full page condition in said page buffer, said memory means and said identification means to effect skipping of an immediately available page image area when it is last-used, and to effect printing of a next page using the immediately available page when it is not last-used.

4,332,466
APPARATUS FOR PRODUCING MICROFORM RECORDS AT HIGH SPEED FROM COMPUTER OR OTHER ELECTRICAL DATA SIGNAL SOURCES

Richard Flasck, Rochester, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jan. 21, 1980, Ser. No. 113,579
Int. Cl.[3] G03B *27/32, 27/52*
U.S. Cl. 355—27 10 Claims

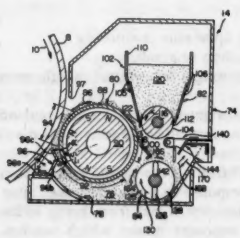


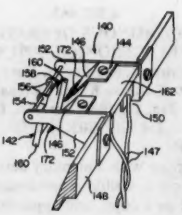
1. In apparatus for producing records of data and including an imaging station, means for sequentially providing light images representing different pages of recorded data to be recorded, a film strip having spaced frame areas which are to be initially imaged by said light images at said imaging station, said film strip also requiring development to bring out an image projected thereon, a developing station including developing means for developing said film strip in incremental degrees depending upon the time of application thereof to said film strip, the improvement comprising: means supporting said film strip between supply and take-up means, said film strip between said supply and take-up means extending past said imaging station and developing station; image projection means at said imaging station which projects said light images upon successive frame area of said film strip with exposure times substantially less than the developing time required to develop an image on said film strip; control means for simultaneously effecting the projection of one of said light images through said projection means upon a frame area of said film strip at said imaging station while a previously exposed frame area of said film strip is being developed at said developing station; and means for moving said film strip between said supply and take-up means in step-by-step fashion simultaneously to bring a previously unexposed frame area of said film strip to said imaging station and an exposed but undeveloped frame areas of said film strip to said developing station at a speed wherein the time duration between successive stepping operations is substantially less than that required to develop said film strip at the developing station, said developing means at said developing station having a length encompassing a sufficient number of frame areas of said film strip that the film strip is exposed to said developing means for a sufficient time fully to develop the image therein during successive imaging and developing operations applied to said film strip.

4,332,467
DEVELOPING DEVICE IN ELECTROSTATIC COPYING APPARATUS

Hiroshi Kimura, Neyagawa; Toshikazu Matsui, Kishiwada; Masahiko Hisajima, Osaka; Yutaka Shigemura, Takarazuka; Yoichiro Irie, Suita, and Kiyoshi Morimoto, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 27, 1980, Ser. No. 163,775
Claims priority, application Japan, Feb.27, 1980, 55-22699
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 D 18 Claims





1. A developing device for an electrostatic copying apparatus, said developing device comprising: a developer container; a developer applicator for holding on its surface a part of a developer present in said developer container for applying toner particles to a latent electrostatic image to be developed; a rotary agitating member in said developer container for agitating the developer for causing it to move in a flow; a toner particle dispenser for dispensing toner particles therein into said developer container, said toner particle dispenser being controlled for performing a toner particle dispensing action in response to the performance of a copying process of the elec-

trostatic copying apparatus; a toner particle dispensing inhibitor connected with said toner particle dispenser for causing said toner particle dispenser to remain inoperative when said toner particle inhibitor supplies a signal thereto, and a detecting means connected to said toner particle inhibitor and having an electrical switch unit having a fixed member in said developer container and a movable member oscillatably mounted in said developer container and movable between a position in which it is in contact with said fixed member and a position in which it is out of contact with said fixed member, said movable member being positioned to be acted on by the flow of developer for moving said movable member from one position to the other when the amount of developer in said container is sufficient, and means for producing a signal for said toner particle dispensing inhibitor in response to the said switch unit being in said other position.

4,332,468
OPTOELECTRONIC PROXIMITY SENSOR

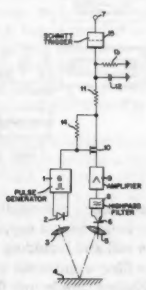
Dietmar Stützle, Lauf, Fed. Rep. of Germany, assignor to Firma Diehl, Nuremberg, Fed. Rep. of Germany

Filed Feb. 17, 1977, Ser. No. 769,893

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1976, 2608066

Int. Cl.³ G01C *3/08*; F42C *13/02*

U.S. Cl. 356—5 **5 Claims**



1. An optoelectronic proximity sensor comprising:

(a) means for emitting directed optical pulses towards a surface;

(b) a pulse generator connected to said emitting means for causing the same to emit the optical pulses at a given pulse repetition frequency;

(c) means oriented toward the point at which the optical pulses emitted by said emitting means impinge on the surface for receiving a portion of the optical pulses which are scattered back from the surface; and

(d) means for evaluating the pulses received by said receiving means, said evaluating means comprising

(1) a highpass filter connected to said receiving means, said highpass filter having a limit frequency which is somewhat below that of the pulse repetition frequency of said pulse generator;

(2) a memory circuit connected to the output of said highpass filter for storing a series of pulses received by said receiving means;

(3) means for enabling said memory circuit to store the received pulses at the beat of said pulse repetition frequency of said pulse generator;

(4) a control circuit connected to the output of said memory circuit for putting out an actuation signal when said memory circuit has received a predetermined number of pulses;

(5) said memory circuit comprising a digital memory in the form of a shift register having a clock pulse input which is connected to said pulse generator, in consequence of which said shift register is controlled by the pulse repetition frequency of said pulse generator and the sensor senses the proximity from the surface.

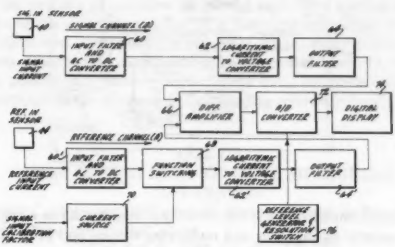
4,332,469
OPTICAL MULTIMETER

Paul H. Wendland, Los Angeles, Calif., assignor to Photodyne, Inc., Newbury Park, Calif.

Filed Mar. 14, 1980, Ser. No. 130,463

Int. Cl.³ G01J *1/42*; G01N *21/01*

U.S. Cl. 356—222 **18 Claims**



1. An optical radiant power measuring device comprising in combination:

(1) means adapted to receive a first photo detector sensor head, the sensor head generating an electrical current related to the intensity of radiant power impinging upon it;

(2) a logarithmic current to voltage amplifier for providing a voltage signal, including a semiconductor feedback loop, said amplifier coupled to said means; and

(3) comparison means coupled to the output of said amplifier and to a reference current source representative of a reference radiant power level, whereby said comparison means provide an output signal corresponding to and representative of the ratio of radiant power impinging upon the photo detector sensor head to that of the reference radiant power level, expressed in decibel units of optical power.

4,332,470
SPECTROPHOTOMETER SYSTEM HAVING POWER LINE SYNCHRONIZATION

Morteza M. Chamran, Elmhurst, Ill.; Larkin B. Scott, Fort Worth, Tex.; Paul B. Williams, Lombard, Ill., and Michael A. Ford, Maidenhead, England, assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 7, 1980, Ser. No. 128,289

Int. Cl.³ G01J *3/08*, *3/42*

U.S. Cl. 356—325 **16 Claims**

1. A spectrophotometer comprising:

monochromator means for providing monochromatic light at a sequence of wavelengths over a predetermined spectral range;

a sample cell;

a light measuring device;

means for directing said monochromatic light through said sample cell onto said light measuring device;

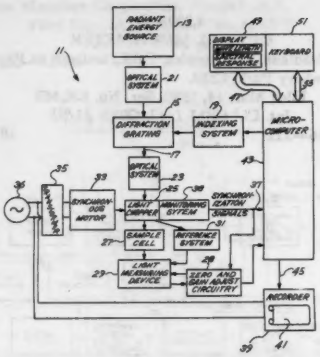
light chopper means for alternately directing monochromatic light to said sample cell and along a second reference path;

motor means connectable to an A.C. power source for controlling the frequency of chopping by said chopper means in proportion to the line frequency of the power source;

recorder means for recording at a line synchronous rate an indication of the spectral response of said measuring device;

monitoring means for monitoring the line frequency of the power source and generating an output digital signal at a

frequency proportional to line frequency; said monitoring means including damping means; and



microcomputer means for receiving output data as a digital sample signal from said measuring device and presenting data converted at a line synchronous rate to said recorder means.

4,332,471

CUVETTE WITH TUB-SHAPED BOTTOM FOR THE OPTICAL EXAMINATION OF LIQUIDS

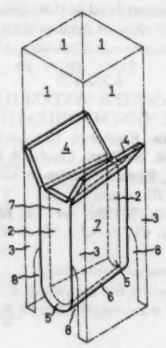
Jürgen Gross, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,321

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922697

Int. Cl.³ G01N *21/03*

U.S. Cl. 356—246 **6 Claims**



1. A cuvette for the optical examination of small amounts of liquids comprising

front and back parallel flat transparent walls whose outer surfaces are a defined distance from one another;

two side walls separated by a distance less than said defined distance and extending between said front and back walls, and ending in a bottom joining the two side walls; and

ribs coplanar with outer faces of the front and back walls, extending outwardly from said inner walls, and being joined thereto above said bottom to define respective recesses extending above the bottom;

wherein said front and back walls end in semicircular surfaces at said bottom, and said bottom includes a surface of rotation joining said front and back semicircular surfaces so that said bottom is tub shaped.

4,332,472

AUTOMATIC CATAPHORESIS APPARATUS

Yutaka Kato, Tama; Hirohiko Tokitoh, Hachioji; Tomohiro Kitahara, Hachioji, and Hiromi Ito, Hachioji, all of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

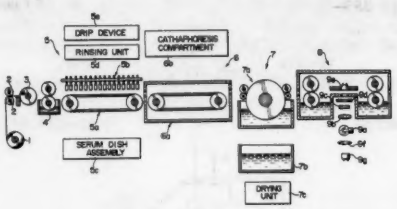
Division of Ser. No. 829,957, Sep. 1, 1977, Pat. No. 4,204,767.

This application Aug. 23, 1979, Ser. No. 69,157

Claims priority, application Japan, Sep. 6, 1976, 51/105719

Int. Cl.³ B05C *1/16*

U.S. Cl. 356—344 **1 Claim**

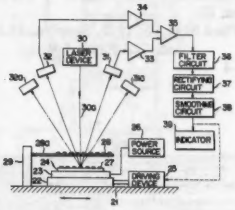


1. An apparatus for automatic examination of blood serum by cataphoretic process, comprising a supply of a serum bearing film in the form of a roll and including means to deliver a continuous length of the film; a cutter for cutting the film to a given length; a buffer solution supply unit for wetting the film with a buffer solution; a serum applicator including a vertically movable guide member, a serum application member movable along the guide member, and feed means for carrying the film into alignment with the application member, the applicator being associated with a serum dish assembly, an application abutment, a rinsing vessel and a drip device to apply blood serum contained in the assembly to the film, to rinse it with a rinsing liquid in the vessel and drip it; a cataphoresis compartment including conveyor belt means for conveying the film with applied serum to a given position and vertically movable receiver means which raise the film away from the belt means for energization thereof to form fractionated patterns thereon; dyeing, decolorizing and drying means including a rotatable drum, a first vessel containing a dyeing solution, a second vessel containing a decolorizing solution and a drying unit each located side by side below the drum and adapted to be sequentially raised have the film immersed in the dyeing solution and then in the decolorizing solution and dried by the drying unit while the film is held attached to the drum; and a densitometer including a feeding mechanism formed by a plurality of rollers, one of which is disposed for immersion into a clearing liquid, and also including a light source and a detector located to be movable in a direction perpendicular to the direction of movement of the film by the feeding mechanism, the film which is dyed, decolorized and dried being cleared before moving into the path between the light source and the detector, whereupon the movement of the film is interrupted to conduct a colorimetric determination of specimens on the film while integrally moving the light source and the detector.

4,332,473
APPARATUS FOR DETECTING A MUTUAL POSITIONAL RELATIONSHIP OF TWO SAMPLE MEMBERS

Akira Ono, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 22, 1980, Ser. No. 114,354
Claims priority, application Japan, Jan. 31, 1979, 54-10080; Mar. 31, 1979, 54-38614
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—356 **13 Claims**



1. An apparatus for detecting a mutual positional relationship of two sample members, comprising:

first and second diffraction gratings, one attached to each of said two sample members, respectively, said first and second gratings being parallel to and facing each other, said first and second diffraction gratings having the same pitch and being separated by an average distance d;

a light source for radiating a coherent light vertically toward the first and second diffraction gratings, said light having a frequency λ;

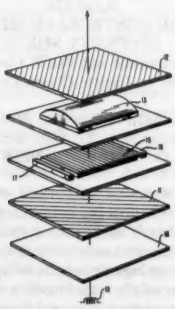
modulating means for modulating one of d and λ; and

detecting means for receiving a first interference beam resulting from those +n-order diffracted beams included in said diffracted beams and a second interference beam resulting from those −n-order diffracted beams included in said diffracted beams and calculating the difference between the intensities of the first and second interference beams thereby detecting a mutual positional displacement between the first and second diffraction grating.

4,332,474
METHOD AND APPARATUS FOR TESTING THE ORIENTATION OF CRYSTAL PLATES

Anton J. Miller, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 11, 1980, Ser. No. 158,400
Int. Cl.³ G01J *4/00*
U.S. Cl. 356—366 **13 Claims**

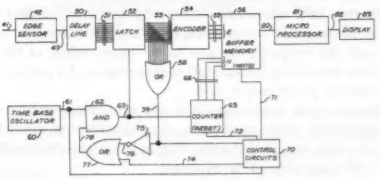


1. A method for testing the crystallographic orientation angle (α) of a stack (15) of birefringent crystal plates characterized in the steps of: placing the stack between a first polarizing element (11) and a second polarizing element (12) where there is also included a cylindrical lens (13) between the stack and second polarizing element; including with said stack a pair of reference plates (17, 18) having crystallographic orientations at the extremes of a desired orientation range for the plates in the stack; shining light onto one major surface of said stack and reference plates through said first polarizing element so that light emerging from the opposite surface will be focused by the lens and upon emerging from the second polarizing element will form an interference pattern comprising a series of essentially linear, parallel light and dark bands (30) with variations in the position of portions (31) along each band being a function of the orientation angle of a plate corresponding to that portion; and comparing the positions of the center of the portions along at least one band with a particular band (32, 33) of the interference pattern produced by each reference plate to determine if the portions fall within the reference bands.

4,332,475
EDGE TIMING IN AN OPTICAL MEASURING APPARATUS

Frank C. Demarest, Killingworth, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Filed Jun. 3, 1980, Ser. No. 156,050
Int. Cl.³ G01B *11/10*
U.S. Cl. 356—386 **2 Claims**



1. In a device for measuring the size of an object by scanning a beam of radiant energy past the object into a photosensor, and the time between the passage of the beam from one edge of the object to the next is measured by the number of pulses from a fixed period time base elapsing during said passage, the improvement which comprises providing: (1) an electrical edge pulse produced by an edge sensor; (2) a fixed frequency time base; (3) means for generating a multiplicity of pulses from the edge pulse, each successive pulse being delayed by an additional identical fraction of the period of the time base; and (4) means for indicating which delayed pulse occurs immediately before the next transition of the time base.

4,332,476
METHOD AND APPARATUS FOR STUDYING SURFACE PROPERTIES

Johan E. Stenberg, Hedelundsragën 5, S-41743 Göteborg; Lars B. Stiblert, Övre Besvärsgatan 4, S-411 29 Göteborg, and Erland T. Sandström, Jungmansgaton 53, S-413 11 Göteborg, all of Sweden

Filed Apr. 16, 1980, Ser. No. 140,881
Claims priority, application Sweden, Apr. 17, 1979, 7903311
Int. Cl.³ G01N *21/21*; G01J *4/00*
U.S. Cl. 356—369 **19 Claims**

1. In a method of studying physical properties of a testpiece surface to obtain a direct point-to-point comparison between the testpiece surface and a reference surface having known properties, said method comprising the steps of:

(a) transmitting electromagnetic radiation toward the testpiece surface to be studied;

(b) polarizing said electromagnetic radiation prior to its reaching said testpiece surface to produce polarized radiation;

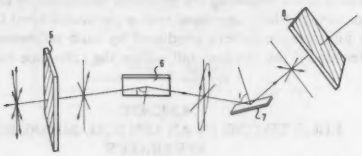
(c) reflecting said polarized electromagnetic radiation from said testpiece surface so as to produce polarized reflected radiation; and

(d) analyzing said polarized reflected radiation so as to extinguish said polarized reflected radiation;

the improvement comprising the additional reflecting step, between steps (b) and (d), of additionally reflecting said polarized radiation at said reference surface having known surface properties, thereby providing further polarization;

wherein said reflecting step (c) and said additional reflecting step comprises reflecting at the same angle of incidence;

wherein said reflecting step (c) and said additional reflecting step are accomplished by respective reflecting surfaces,



and wherein the radiation reflected at one of said respective reflecting surfaces has a polarization component which, being parallel to the plane of incidence at said one surface, is perpendicular to the plane of incidence at the other of said respective reflecting surfaces;

wherein said additional reflecting step enables said direct point-to-point comparison between the reference surface and the testpiece surface to be made, while at the same time providing phase-shift compensation, by means of said further polarization; and

wherein said analyzing step (d) comprises extinguishing radiation of the same state of polarization as exists before the first one of said reflecting step (c) and said additional reflecting step to be executed.

4,332,477

FLATNESS MEASURING APPARATUS

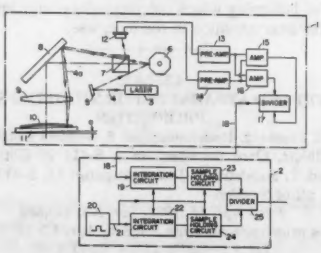
Masatoshi Sato, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 107,939, Dec. 28, 1979, abandoned. This application Dec. 11, 1980, Ser. No. 215,341

Claims priority, application Japan, Jan. 9, 1979, 54-1959

Int. Cl.³ G01B *11/30, 11/24;* **G01C** *25/00*

U.S. Cl. 356—371 **1 Claim**



1. A flatness measuring apparatus, comprising:

a scanning optical system for scanning a tested surface with a constant incident angle;

a position detector for detecting the normal reflection angle from said tested surface;

time-axis generating means for generating a square-wave output during a measuring time corresponding to the width of measurement;

inclination signal generating means for generating a signal corresponding to the inclination of said tested surface with respect to a standard position thereof, and

ratio calculating means for providing a ratio between the signal from said inclination signal generating means and a signal obtained by electrically integrating, with respect to time, the signal provided by said time-axis generating means.

4,332,478

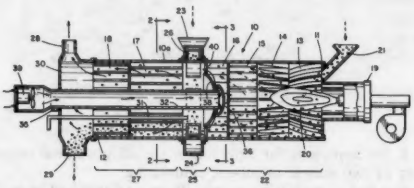
METHOD AND APPARATUS FOR REDUCING SMOKE EMISSIONS IN AN ASPHALT DRUM MIXER

Lee V. Binz, Hamshire, Ill., assignor to Barber-Greene Company, Aurora, Ill.

Filed May 16, 1979, Ser. No. 39,383

Int. Cl.³ B28C *5/46*

U.S. Cl. 366—4 **22 Claims**



1. A method of controlling smoke emissions from a drum mixer of the type having an inlet end and an outlet end and adapted for making paving material, such method comprising the steps of:

(a) introducing aggregate into said drum adjacent the inlet end thereof;

(b) heating said aggregate in a first heating zone by a heating means located in the drum adjacent the inlet end thereof;

(c) conveying said aggregate downstream from the inlet end of the drum to the outlet end thereof;

(d) introducing asphaltic material into said drum at a second zone therein which adjoins the first zone downstream of the latter;

(e) cooling the hot gases in the drum by controllably contacting such gases with a non-liquid cooling medium which is introduced in the drum in a substantially uniform pattern transversely thereof and in an area adjacent to and upstream of the second zone;

(f) mixing the aggregate and the asphaltic material in the drum in a third mixing zone which adjoins the second zone downstream of the latter; and,

(g) discharging the resulting mixture from the outlet end of the drum.

4,332,479

APPARATUS FOR CONTROLLED MIXING IN A HIGH INTENSITY MIXER

Zenas Crocker, Westmount, and Ved P. Gupta, La Salle, both of Canada, assignors to Carlew Chemicals Limited, Montreal, Canada

Division of Ser. No. 962,778, Nov. 21, 1978, Pat. No. 4,230,615. This application Mar. 27, 1980, Ser. No. 134,416

Int. Cl.³ B01F *15/02;* **B29B** *1/06*

U.S. Cl. 366—77 **5 Claims**

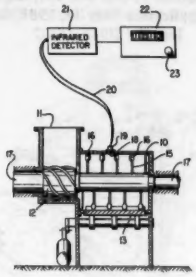
1. An apparatus for controlled mixing of a thermoplastic or thermosetting mixable material comprising:

a high intensity batch mixer with a chamber for agitating a batch of the thermoplastic or thermosetting material,

blade means having high tip speeds for agitating the material in the chamber of the high intensity mixer,

infrared radiation detecting means for monitoring infrared radiation produce by the batch of the material in the chamber of the high intensity mixer to determine the instantaneous temperature of the batch in the mixer sepa-

rately from mixer temperature, the infrared radiation detecting means including a protective window at the mixer and an optical fiber system attached to the protective window and



means responsive to the batch temperature to discharge the batch from the mixer with a minimum time lag when the batch temperature reaches a final predetermined level so as to produce uniform batches of mixed material having short heat histories, optimum processing and physical property characteristics.

4,332,480

KNEADING AND MIXING MACHINE

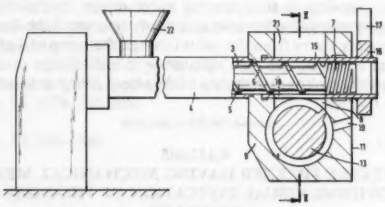
Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover Kleefeld, Fed. Rep. of Germany

Filed May 23, 1980, Ser. No. 152,834

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2913219

Int. Cl.³ B28C *7/16*

U.S. Cl. 366—77 **4 Claims**



1. A continuously operable kneading and mixing machine for thermoplastic synthetic materials, comprising:

(a) housing means formed with an inlet for the material and an outlet aperture for discharging plasticized material from the housing;

(b) a mixing rotor rotatable in said housing means, said rotor including a screw conveying portion which extends over and thus covers said outlet aperture;

(c) a throttling member in the form of a cylindrical sleeve mounted in said housing means adjacent the outlet end thereof and adapted to be selectively independently rotated relative to said rotor, said cylindrical sleeve extending closely but rotatably around at least the region of said screw conveying portion of said rotor which covers said outlet aperture, wherein the internal diameter of said cylindrical sleeve is the same as the internal diameter of said housing means surrounding said rotor thereby providing a continuous surface closely around said rotor for effecting the desired plasticizing of said material, said cylindrical sleeve being formed with a circumferentially limiting discharge orifice adapted to be longitudinally aligned with said outlet aperture, and

(d) means for rotating said cylindrical sleeve so as to selectively align, partially align or disalign said discharge orifice with said outlet aperture, whereby the plasticized material can respectively freely pass through said outlet aperture, pass with restriction through said outlet aperture thereby increasing the retention time of and consequently the shear energy applied to the material, or be blocked altogether from passage through said outlet aperture.

4,332,481

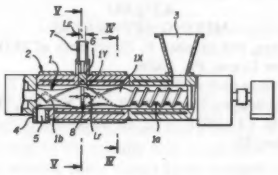
CONTINUOUS MIXING MACHINE

Kimio Inoue, Kobe; Katsumi Ogawa, Amagasaki; Tsugushi Fukui, Miki; Toshihiro Asai, and Shinji Hashizume, both of Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Mar. 27, 1980, Ser. No. 134,655

Int. Cl.³ B29B *1/10*

U.S. Cl. 366—84 **12 Claims**



1. A continuous mixing machine for mixing a material fed at one end thereof and discharging the mixed material through a discharge orifice at an opposite end in a continuous operation comprising:

a plurality of rotors each provided with mixing blade means;

a mixing chamber encircling said mixing blade means;

a throttle member hermetically sealed in a wall portion of said mixing chamber defining a part of said mixing chamber at a position facing said blade means; and

means for moving said throttle means in a direction normal to the axes of said blade means toward and away from the blade means so as to vary the tangential clearance with respect to outer surfaces of said blade means, thereby controlling the space within said mixing chamber.

4,332,482

FLUID MIXER

Kevin G. Engler, 13102 Puget Sound Blvd., Edmonds, Wash. 98020

Filed Jul. 21, 1980, Ser. No. 170,808

Int. Cl.³ B01F *3/10*

U.S. Cl. 366—130 **9 Claims**

1. A fluid mixer for insertion into a container having the fluid to be mixed comprising:

(a) a flexible, nominally flat insertion member:

being configurable into a tubular shape approximating the shape of the container;

when inserted into the container, said insertion member pressing against the interior of the container;

and when inserted into the container, said insertion member having an open top and bottom and a perimeter substantially similar to the interior of the container; and

(b) a plurality of mixing blades carried on the insertion member extending inwardly toward the vertical axis of the container with the mixing blades being carried around the perimeter of

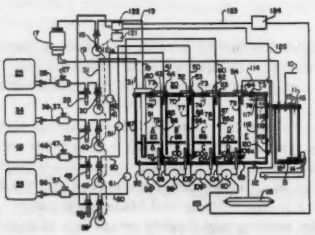
the insertion member from the top of the insertion member to the bottom thereof to urge the fluid upwardly or downwardly upon reciprocal rotation of the container about its vertical axis.

4,332,483

MIXING APPARATUS

Henry F. Hope, and Stephen F. Hope, both of 2421 Wyandotte Rd., Willow Grove, Pa. 19090

Continuation-in-part of Ser. No. 76,172, Sep. 17, 1979. This application Feb. 8, 1980, Ser. No. 119,759
Int. Cl.[3] B01F *5/12, 15/02;* **G05D** *11/02*
U.S. Cl. 366—132 **15 Claims**



1. Mixing apparatus for fluent materials comprising

tank means having a plurality of vertical compartments and a bottom wall portion,

each of said compartments having a downwardly directed fluid delivery member extending downwardly to a location in spaced relation to the bottom wall portion,

a horizontal partition intermediate the top and bottom of said fluid delivery member and separating said compartments into an upper storage space and a lower space with fluid access therebetween,

a supply connection for a first supply of liquid,

means for intermittently delivering a measured quantity of liquid from said first supply connection through said fluid delivery member to said lower space,

a supply connection for a second supply of liquid,

means for intermittently delivering a measured quantity of liquid from said second supply connection through said fluid delivery member to said lower space,

means comprising a pump externally disposed with respect to said lower space and having inlet and delivery connections connected to said lower space for continuously agitating the liquid in said lower space, and

liquid storage means for the reception of liquid from said receptacle,

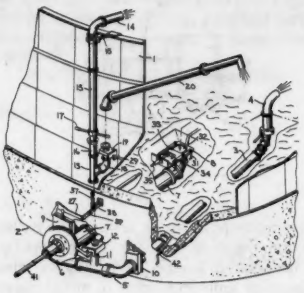
the intermittent supplying of said measured quantities of said liquids advancing the liquid through said tank means.

4,332,484

AGITATION SYSTEM FOR MANURE SLURRY

Anthony J. Peters, Mt. Prospect, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Continuation of Ser. No. 139,204, Apr. 11, 1980, abandoned, which is a continuation of Ser. No. 951,748, Oct. 16, 1978, abandoned. This application May 18, 1981, Ser. No. 264,567
Int. Cl.[3] B01F *15/02*
U.S. Cl. 366—137 **13 Claims**



1. An agitation system for agitating animal manure slurry stored in a tank to mix and blend solids, fibers and liquid into a homogenized mass for easy handling which comprises, a rotatable nozzle type agitator generally centrally located on the floor of the tank and mounted to rotate about a vertical axis, a valve located inside the bottom of the tank and connected by a piping system leading to the nozzle type agitator, as well as to a discharge outside the tank and to the top of the tank, the said valve being opened and closed from outside of the tank, a pump connected to the piping system to upon actuation pump manure slurry from the tank through the valve when the valve is open and flow it through the piping system for discharge into the tank through the nozzle type agitator, and a plurality of flow control valve means located in the piping system and adjustable selectively to control the flow of the manure slurry from the valve through the pump and piping system to the nozzle type agitator or to a discharge opening outside the tank or into the top of the stored slurry to break the crust thereon.

4,332,485

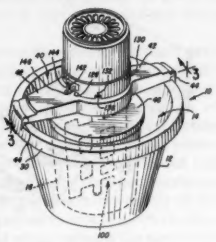
PORTABLE FREEZER HAVING MECHANICAL MEANS PROVIDING VISUAL INDICATION OF FIRMNESS OF CONTENTS

Robert C. Woodman, Hattiesburg, Miss., assignor to Sunbeam Corporation, Chicago, Ill.

Continuation of Ser. No. 69,016, Aug. 22, 1979, abandoned. This application Apr. 30, 1981, Ser. No. 258,865
Int. Cl.[3] A23G *9/10*
U.S. Cl. 366—142 **5 Claims**

1. In a portable freezer for preparation of sherbet, ice cream, and other frozen confections, of a type comprising a stationary bucket, which has an open top and is adapted to hold ice, salt, and brine, a removable can, which is adapted to hold confections being frozen, and which is seated within the bucket so as to be rotatable about a vertical axis, a removable head, which comprises horizontal arms bridging the open top of the bucket and a cover covering the can and its contents, a motor, which is arranged to rotate the can within the bucket about said vertical axis in one rotational sense, and which may be deenergized manually if it is desired to do so before the motor begins to stall, and a dasher, which is mounted within the can and beneath the cover so as to remain relatively stationary as the can is rotated, an improvement wherein the dasher is journalled so as to be rotatable about said vertical axis, wherein the

dasher is restrained by resilient means permitting a range of limited rotation of the dasher about said vertical axis and biasing the dasher so as to oppose such rotation of the dasher in said rotational sense, and wherein a horizontal arm is coupled mechanically to the dasher so as to rotate with the dasher and is extended outside an external surface of the head so as to provide progressive visual indication of such rotation of the



dasher, and wherein there is no need for a user to calibrate any components for different recipes, whereby progressive visual indication of the firmness of the contents of the can is provided so that when desired firmness is indicated, the user may disable the motor before the motor begins to stall, so as to be able to prepare soft confections, as well as firm confections, of a variety of different recipes yielding optimum results at different firmnesses.

4,332,486

ROTARY PULSATION APPARATUS

Abdusalam A. Mutalibov, ulitsa Shpilkova, 28; Oleg D. Murashov, ulitsa Navoi, 22, kv. 5; Takhir M. Makhmudov, ulitsa Ivlieva, 26; Leonid M. Shvartsman, TS-13, 20, kv. 18, all of Tashkent; Alexei D. Deminov, Starokonjushenny pereulok, 32, kv. 8, Moscow; Valentina A. Podlesnykh, ulitsa B. Galushkina, 17, kv. 426, Moscow, and Lev A. Spirin, ulitsa Novinki, 6, korpus 1, kv. 10, Moscow, all of U.S.S.R.

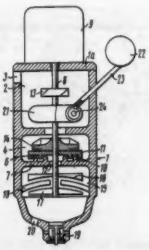
PCT No. PCT/SU79/00082, § 371 Date May 27, 1980, § 102(e) Date May 23, 1980, PCT Pub. No. WO80/00798, PCT Pub. Date May 1, 1980

PCT Filed Sep. 19, 1979, Ser. No. 196,046

Claims priority, application U.S.S.R., Sep. 26, 1978, 2662187; Sep. 26, 1978, 2662188

Int. Cl.³ B01F *15/06*

U.S. Cl. 366—146 **6 Claims**



1. A rotary pulsation apparatus having a casing with walls defining a premixing chamber having an inlet to admit emulsions and/or suspensions into the apparatus, and a mixing chamber communicating with the premixing chamber, having an outlet and accommodating a rotor and a stator to provide a variable resistance to a flow of emulsions and/or suspensions with the rotor rotating, wherein an improvement comprises a reservoir accommodated in the premixing chamber, having walls provided with a multiplicity of perforations and communicating with a source of at least one additional ingredient of a mixture to be obtained.

4,332,487

SOLID INK CARTRIDGE FOR A NON-IMPACT PRINTER

Michele Bovio, Brosso; Aquilino Barbero, Pavone; Walter Gillone, Ivrea, and Pierangelo Berruti, Chivasso, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

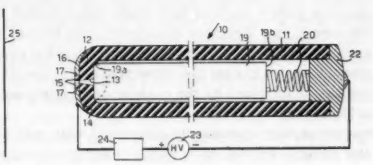
Continuation of Ser. No. 972,267, Dec. 22, 1978, Pat. No. 4,238,807. This application Jul. 30, 1980, Ser. No. 173,823

Claims priority, application Italy, Dec. 28, 1977, 69927 A/77

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.³ G01D *15/18*

U.S. Cl. 400—126 **23 Claims**



1. A solid ink cartridge for use in a non-impact printer, including a rod of electrically conductive solid ink formed by a mixture of pigmented particles and a binder, a substantially tubular housing of electrically non conductive material, one end of said housing being closed by an integral wall having a nozzle to allowing the emission of ink particles, a closure element of electrically conductive material for closing the other end of said housing, said element being electrically connected to said rod, and spring means located inside said housing for urging said rod toward said wall.

4,332,488

DEVICE FOR THE CONTROL OF THE POSITION OF THE TYPE CARRYING ELEMENT IN TYPEWRITERS

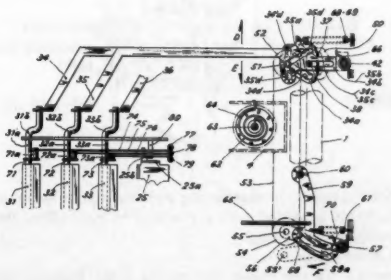
Gian P. Barozzi, and Giancarlo Horeschi, both of Tokyo, Japan, assignors to Xelavis S.A., Panama City, Panama

Filed Jul. 10, 1980, Ser. No. 168,386

Claims priority, application Italy, Jul. 11, 1979, 24281 A/79

Int. Cl.³ B41J *1/60*

U.S. Cl. 400—161.5 **6 Claims**



1. In a printing machine having a platen, a single-element type carrier juxtaposed with said platen and provided with typefaces for applying corresponding characters to a paper lying against said platen, a keyboard provided with keys associated with said characters and actuatable to selectively position respective typefaces at a printing location, and a mechanism for operatively coupling said keys with said element for

positioning same, the improvement wherein said mechanism comprises:

a respective slidable interposer actuatable by each key and formed with a coded contour representing the selected key;

cam means on said machine operable upon actuation of each key for displacing the respective interposer;

a plurality of rods each provided with formations selectively engageable with the coded contours of said interposers for selective angular displacement to selective angular extents in accordance with the selected typefaces;

respective bars eccentrically connected to said rods and shiftable by said rods with displacements determined by the angular displacements of said rods by said coded contours, each of said bars having a slot inclined to its direction of displacement;

a respective shaft received in each slot and carrying a respective pulley, each of said shafts being guided for displacement in a direction disaligned from that of the respective slot whereby displacement of each bar causes the respective slot to cam the respective shaft directly into a position determined by the contour of an interposer of an actuated key; and

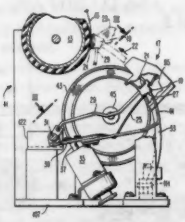
a respective wire operatively connected with said element and passing around each pulley whereby movement of each pulley deflects said element in a respective sense so as to dispose the typeface associated with each actuated key at said location.

4,332,489

PRINT HAMMER ACTUATING DEVICE

William L. Dollenmayer, Versailles, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,364
Int. Cl.³ B41J *1/02*
U.S. Cl. 400—172 **16 Claims**



1. In an impact printer having a platen, a print hammer, and a cartridge provided with a plurality of type chips, the improvement comprising:

a drive motor;

energy storage means for storing print hammer driving energy derived from motion of said motor;

type chip positioning means responsive to said motion of said motor to transfer a selected type chip to a preprinting loaded position on said print hammer from said cartridge;

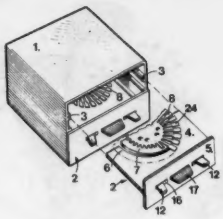
means responsive to the positioning of a selected type chip on said print hammer to release said energy storage means for accelerating said print hammer towards said platen whereby said type chip impacts said platen.

4,332,490

LINING-UP ASSEMBLY FOR A PRINTING DISC

Giulio Tschudi, Yverdon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

Filed Jun. 18, 1980, Ser. No. 160,592
Claims priority, application Switzerland, Jul. 3, 1979, 6184/79
Int. Cl.³ B41J *1/26;* B65D *85/02;* B41J *29/16*
U.S. Cl. 400—175 **5 Claims**



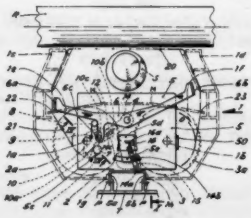
1. A lining-up assembly for a printing disc for use in a typewriter, said disc including a hub, radial arms on said hub, the free ends of said arms provided with relief characters, said assembly comprising a casing, guides in said casing, at least one movable drawer slidable in said guides, means for securing the hub to the drawer, said means comprising a manipulating tool for handling the printing disc, said drawer comprising a front plate and a support plate slidable in said guides of said casing, said support plate having a cut-out area in the form of a circular segment, the edge of which surrounds said hub on a portion of its periphery, said manipulating tool attached to the support plate and releasably secured to said hub to permit securing the hub to the drawer and for handling the disc when it is connected to and disconnected from said typewriter.

4,332,491

DEVICE FOR THE FEED AND MOTION REVERSAL OF THE RIBBON FOR TYPEWRITER CARTRIDGES AND CARTRIDGE THEREFORE

Gian P. Barozzi, and Giancarlo Horeschi, both of Tokyo, Japan, assignors to Xelavis S.A., Panama City, Panama

Filed Jul. 10, 1980, Ser. No. 168,463
Claims priority, application Italy, Jul. 25, 1979, 24667 A/79
Int. Cl.³ B41J *35/28, 33/50*
U.S. Cl. 400—208 **4 Claims**



1. In a printing device having a platen, a type element juxtaposed with said platen and actuatable to imprint a character upon a paper disposed against said platen, a ribbon-feed mechanism for advancing a ribbon between said element and said device having a rotatable shaft, the improvement wherein said ribbon-feed mechanism comprises:

a ribbon cartridge, said cartridge including:

a cartridge housing formed with a pair of ribbon guides straddling said element,

a pair of ribbon spools for unwinding and winding up a ribbon passing between said guides, said guides holding

said ribbon between said element and said platen, said spools having toothed peripheries lying in a common plane, said housing having a bottom formed with a window between said toothed peripheries,

a pair of deflectable wings traversed by said ribbon between each spool and a respective guide, and

respective rings fixed to said ribbon toward opposite ends thereof whereby engagement of each ring with a respective one of said wings deflects the engaged wing outwardly;

a support plate pivotally mounted on said device for upward and downward rocking movement, said support plate being provided with means for positioning said cartridge thereon, whereby a rocking movement of said support plate lifts and lowers a stretch of said ribbon spanning said guide between said element and said platen;

a balance lever pivotally mounted on said support plate and having a pair of opposite arms each juxtaposed with one of said wings whereby, upon unwinding of ribbon from each spool, the engagement of a respective ring with a respective one of said wings deflects the same to swing said lever in a respective sense;

cam means on said shaft and cam follower means on said plate for alternately raising and lowering said plate;

a stepping pawl lever on said plate having a formation extending through said window and selectively directly engageable with the toothed peripheries of either of said spools, said stepping pawl lever being engageable with said cam means for stepping the toothed periphery of the spool with which it is engaged;

means including an intermediate lever connecting said balance lever with said stepping pawl lever for deflecting said stepping pawl lever from engagement with the toothed periphery of one of said spools into engagement with the toothed periphery of the other of said spools; and

a formation on said intermediate lever engageable with said spools for preventing reverse rotation thereof during the stepping of each spool by said stepping pawl lever.

4,332,492

DEVICE FOR CONTROLLING THE CARRIAGE MOVEMENT IN A PRINTER

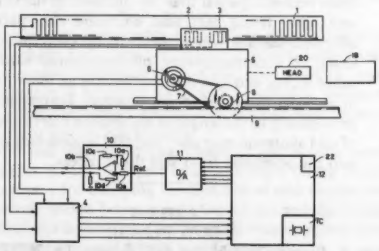
Rolf A. B. Thern, and Peter Dahlberg, both of Järfälla, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 19, 1979, Ser. No. 76,875

Claims priority, application Sweden, Sep. 20, 1978, 7809895; Aug. 29, 1979, 7907196

Int. Cl.³ B41J *19/00*

U.S. Cl. 400—320 **2 Claims**



1. A device for controlling carriage movement in a printer comprising a carriage, the carriage being movable along an associated record carrier, a direct current motor for moving the carriage, and a drive unit for generating a drive signal to the direct current motor, in which the drive unit compensates for load variations during carriage movement, characterized in that the device further comprises a carriage position indicator, a microprocessor, a digital-to-analog converter, means for pulse shaping and a timing circuit for sensing the position of the carriage in relation to a position reference point at two occasions which are determined by said timing circuit, a signal processing circuit for analog-to-digital conversion of the carriage position values which are obtained and for the supply of said values to said microprocessor, said microprocessor being arranged so as to calculate therefrom an actual carriage speed between said occasions and to compare this speed and an optimal carriage speed, which is stored in the microprocessor, and to calculate on the basis of this comparison, a compensation factor for a reference signal value which is generated by the microprocessor and supplied to the drive unit via said digital-to-analog converter during the next carriage movement, said carriage position indicator comprising a Meander-indicator comprising an element which is fixedly mounted in the printer and being extended in the movement direction of the carriage and having a length which corresponds to the printing width of the printer, and two further Meander elements supported by the carriage and arranged close to and along the fixed element in order to secure a good inductive coupling between cooperating Meander elements, said two further Meander elements being provided on the carriage at a mutual distance which is such that the loop structures thereof will have a mutual displacement equal to ¼ period of the loop structure relative to the fixed element, and further comprising a sinus generator and a cosinus generator for supplying each respective one of said further Meander elements on the carriage with sinus type signals of the same frequency and having a mutual phase deviation of 90°, thereby generating inductively in said fixed element an output signal of the same frequency and having a phase deviation relative to the supplied sinus signal which is a measure of the carriage displacement within a period of the Meander-loop structure, said device having means for the conversion of said phase deviation to a digital value which comprises a counter having the cycle length of A bits, which is advanced at a frequency equal to A times the frequency of the sinus signal and in synchronism therewith, and a latch circuit to which is supplied a binary number having A bits from said counter and the value of which is consequently changed step-wise and periodically from 0 to the maximum value of the A bits number, and in that the sinus output signal from the fixed indicator element, after having been pulse-shaped by said means for pulse shaping to a rectangular wave with frequency and phase unchanged, is supplied to said latch circuit as a clock signal, thereby locking the latch circuit synchronously with the output signal of the fixed indicator element to binary numbers providing at each occasion a binary representation of said phase deviation within a period of the Meander-loop structure.

4,332,493

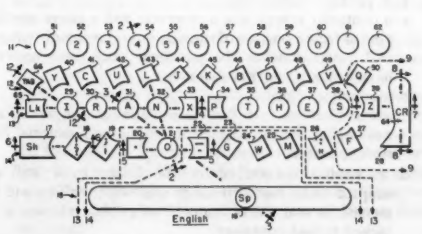
TEN-FINGER TYPEWRITER KEYBOARDS

Harvey Einbinder, 308 W. 97 St., New York, N.Y. 10025

Filed Jun. 12, 1980, Ser. No. 158,944

Int. Cl.³ B41J *5/10*

U.S. Cl. 400—484 **12 Claims**



1. An English language keyboard for typewriters, CRT terminals, and word processing equipment, comprising a plurality of character keys arranged in straight parallel key rows transversely oriented with respect to the operator:

wherein a number key row is situated at the greatest distance from the operator, an upper letter key row is situated between the number key row and the operator, a home key row is situated between the upper letter key row and the operator, and a lower letter key row is situated between the home key row and the operator;

wherein character keys in each key row are designated in serial order from the left hand side of the keyboard to the right hand side of the keyboard as viewed by the operator, with the character key at the left hand end of a given key row being designated as the first key, and the character key at the right hand end of a given key row being designated as the highest numbered key in the said key row, as viewed by the operator;

wherein upper and lower case forms of a letter are assigned to the same character key;

wherein letters are assigned to the said character keys in key rows from left to right as viewed by the operator as follows:

in the lower letter key row: O assigned to the fourth key; and

in the home key row: I assigned to the first key, R assigned to the second key, A assigned to the third key, N assigned to the fourth key, T assigned to the seventh key, H assigned to the eighth key, E assigned to the ninth key, and S assigned to the tenth key.

4,332,494

ADJUSTABLE COSMETIC WIPER

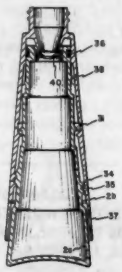
Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 857,074, Dec. 5, 1977, Pat. No. 4,194,848. This application Nov. 21, 1979, Ser. No. 96,710

Claims priority, application European Pat. Off., Nov. 30, 1978, 78200323.0

Int. Cl.³ A46B *11/04*

U.S. Cl. 401—5 **21 Claims**



1. A package comprising:

a. a container comprising a reservoir and a cover overlapping at least a portion of the side of said reservoir wherein said cover contains the container neck, said reservoir having fluent material therein;

b. a container closure;

c. a wiper having an orifice means defining a single continuous wiping surface adapted to wipe excess material from the applicator;

d. an applicator attached to said closure by a shaft and adapted to be passed through said wiper orifice and immersed in said fluent material when said closure is attached to said container;

e. a calibrated adjusting means to vary the cross sectional area of said orifice; said adjusting means comprising an abutting means positioned adjacent to said wiper orifice and a guide means adapted to control the amount of pressure exerted on said wiper by said abutting means, said adjusting means permitting a user to reproduce a previous result.

4,332,495

WOODEN FRAMES OR THE LIKE HAVING TWO FRAME PARTS ADAPTED TO BE CONNECTED BY A CLAMPING-ECCENTRIC CONNECTOR

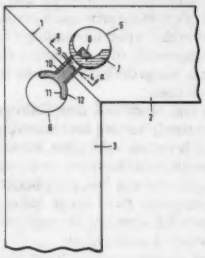
August Bürgers, Erkelenz-Gerderath, Fed. Rep. of Germany, assignor to Europatent S.A., Luxembourg, Luxembourg

Filed Oct. 27, 1980, Ser. No. 200,692

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 8011691[U]

Int. Cl.³ F16B *2/18*

U.S. Cl. 403—6 **6 Claims**



1. In a frame having two frame parts abutting at a joint interface and having a tensioning-eccentric connector, the two frame parts each having a borehole which extends perpendicularly to the joint interface and each having a preferably round recess at the end of its borehole, the boreholes being substantially aligned, the tensioning-eccentric connector comprising a round tensioning eccentric being adapted to be inserted turnably into one of the recesses of one of the frame parts and a tension bolt being adapted to be introduced into the boreholes, a clamping end of the tension bolt engaging into the tensioning eccentric and a fastening end of the tension bolt being held fast in the other recess of the other frame part by means of a holder, the improvement wherein

the holder comprises an abutment stop part which is fixed on the fastening end of the tension bolt, said other recess receives said abutment stop part therein, the length of said abutment stop part in a circumferential direction of the other recess is greater than the diameter of the borehole in said other frame part, said abutment stop part has an abutment surface which substantially corresponds to the shape of a corresponding circumferential wall of said other recess, and said other recess has an inner dimension in an axial direction of the borehole corresponding approximately to the length of the tension bolt including that of said abutment stop part, and said tension bolt is inserted into the boreholes from said other recess.

4,332,496

BOW PENCIL

John K. Branch, 2003 Maine Ave., Kenner, La. 70062

Filed May 11, 1981, Ser. No. 262,484

Int. Cl.³ B43K *29/00*

U.S. Cl. 401—52 **6 Claims**

1. A bow pencil comprising:

a. a bow pencil shaft, said shft being threaded and adopted to

be attached to the bow frog portion of a viol bow, replacing the bow screw;

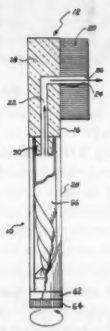
b. a means attached to said bow shaft for marking on a surface, said pencil shaft and said means being attached to said bow at the gripping end portion thereof, replacing the bow screw, rotation of said means and attached shaft effecting an adjustment of the viol bow hair.

4,332,497

COMBINATION TOOTHBRUSH AND TOOTHPASTE DISPENSER

Gonzalo C. Rodriguez, Avenida Los Naranjos 3, La Florida, Caracas, Venezuela

Filed Feb. 22, 1980, Ser. No. 123,882
Int. Cl.³ A46B *11/04*
U.S. Cl. 401—154 **5 Claims**



1. A combination fountain toothbrush and toothpaste reservoir comprising:

a fountain toothbrush having a brush head portion and a stem means having a male coupling means;

a hollow handle having a first end and a second end and having female coupling means on said first end to engage the male coupling means of said stem means;

a conduit means extending through said fountain toothbrush, communicating with said hollow handle;

an elongated flexible tube reservoir means having a first open end for discharging toothpaste to said brush head and a second open end for receiving toothpaste to fill said reservoir, wherein said reservoir means is disposed in said hollow handle, said first open end being secured to said first end of said hollow handle; and

twisting means, connectable to said second end of said hollow handle, for twisting said flexible tube reservoir means to dispense toothpaste therefrom, said twisting means comprising a rotatable knob and a clamping means for clamping the second end of said flexible tube reservoir means to said rotatable knob;

wherein said female coupling means of said hollow handle includes at least one pair of downwardly facing flexible flap means for clamping the first end of said flexible tube reservoir means between said flap means and the internal wall of said hollow handle when said male coupling means is inserted into said female coupling means.

4,332,498

SEALANT APPLICATOR

William R. Lewis, P.O. Box 82684, Oklahoma City, Okla. 73148

Filed Nov. 17, 1980, Ser. No. 207,415
Int. Cl.³ B43K *5/02*
U.S. Cl. 401—188 R **14 Claims**

1. A sealant applicator for applying an elastomeric sealant made by mixing a first and a second component, comprising:

a frame;

a first component supply for storing a quantity of the first component being disposed on the frame;

a second component supply for storing a quantity of the second component being disposed on the frame;

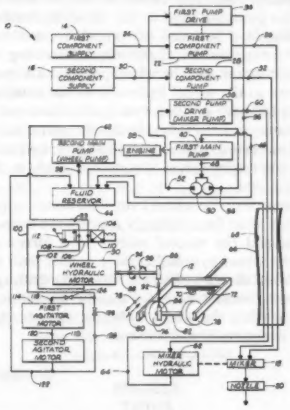
a first component pump fluidically connected to the first component supply for receiving the first component and for pumping the first component out a pump discharge;

a second component pump fluidically connected to the second component supply for receiving the second component and for pumping the second component out a pump discharge;

a first component conduit having opposite ends with one end being connected to the pump discharge of the first component pump, the first component pump pumping the first component from the first component supply through the first component conduit;

a second component conduit having opposite ends with one end being connected to the pump discharge of the second component pump, the second component pump pumping the second component from the second component supply through the second component conduit;

a mixer, the end of the first component conduit opposite the end connected to the first component pump being connected to the mixer and the end of the second component conduit opposite the end connected to the second compo-



nent pump being connected to the mixer, the mixer receiving the first and the second components flowing through the first and the second component conduits and mixing the first and the second components to form the elastomeric sealant when being driven;

a nozzle connected to the mixer for receiving the elastomeric sealant and for dispensing the received elastomeric sealant;

a mixer hydraulic motor connected to the mixer for driving the mixer;

a first hydraulic conduit having opposite ends with one end being connected to the mixer hydraulic motor for delivering hydraulic fluid to the mixer hydraulic motor;

a second hydraulic conduit having opposite ends with one end being connected to the mixer hydraulic motor for receiving hydraulic fluid from the mixer hydraulic motor, the first and the second component conduits and the first and the second hydraulic conduits each extending a distance from the frame for disposing the mixer, the mixer hydraulic motor and the nozzle at a position remote from the frame;

a fluid reservoir for storing a quantity of hydraulic fluid, the end of the second hydraulic conduit opposite the end connected to the mixer hydraulic motor being connected to the fluid reservoir;

a mixer pump connected to the fluid reservoir and to the end

of the first hydraulic conduit opposite the end connected to the mixer hydraulic motor for pumping hydraulic fluid through the first hydraulic conduit to the mixer hydraulic motor;

a flexible tube having an opening extending therethrough, a substantial portion of the first and the second component conduits and the first and second hydraulic conduits extending through the opening in the flexible conduit, the flexible conduit maintaining the first and the second component conduits and the first and the second hydraulic conduits in close proximity during the operation of the sealant applicator so the heat from the first and the second hydraulic conduits heats the first and the second components flowing through the first and the second component conduits;

a wheel shaft, having opposite ends;

means for journally connecting the wheel shaft to the frame;

a first wheel connected to the wheel shaft generally near one end of the wheel shaft;

a second wheel connected to the wheel shaft generally near the other end of the wheel shaft;

a wheel hydraulic motor supported on the frame having an output shaft, the wheel hydraulic motor rotatingly driving the output shaft in a forward direction in forward driven condition and rotating driving the output shaft in a reverse direction in a reverse driven condition;

a wheel pump fluidically connected to the wheel hydraulic pump for pumping fluid to the wheel hydraulic motor;

means interposed between the wheel hydraulic motor and the wheel pump for fluidically connecting the wheel hydraulic motor and the wheel pump in a forward driven condition so the wheel hydraulic motor rotatingly drives the output shaft in the forward direction and for fluidically connecting the wheel hydraulic motor and the wheel pump in a reverse driven condition so the wheel hydraulic motor rotatingly drives the output shaft in the reverse direction; and

means connecting the wheel hydraulic motor output shaft to the wheel shaft for rotatingly driving the wheel shaft and the first and the second wheels in a forward direction when the wheel hydraulic motor output shaft is driven in the forward direction and for rotatingly driving the wheel shaft and the first and the second wheels in a reverse direction when the wheel hydraulic motor output shaft is driven in the reverse direction.

4,332,499

JOINT

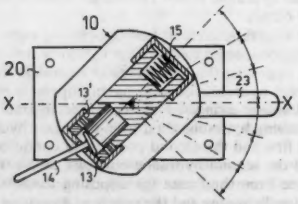
Edwin Stücheli, In den Reben 379, CH-5105 Auenstein, Switzerland

Filed Sep. 11, 1980, Ser. No. 186,247

Claims priority, application Switzerland, Sep. 11, 1979, 8188/79

Int. Cl.³ F16B *7/10*; F16C *11/00*; F16D *1/12*

U.S. Cl. 403—53 **6 Claims**



1. A joint comprising a base plate having two bearings secured thereto for supporting a T-shaped joint component so as to render it tiltable about its cross beam and lockable in different positions, characterized in that said base plate (**10**) is maintained on a support plate (**20**) in a pivotable condition by means of a pin (**16**), the median line (y—y) of said pin (**16**) perpendicularly intersecting the pivot axis (x—x) of said cross beam, said base plate (**10**) being lockable in different positions.

4,332,500

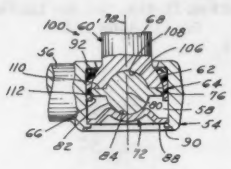
TIE ROD BALL JOINT CONSTRUCTION

Joseph E. Smith, Jr., Birmingham, and William H. Trudeau, Brighton, both of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Mar. 2, 1979, Ser. No. 16,917

Int. Cl.³ F16C *11/06*

U.S. Cl. 403—114 **17 Claims**



1. A joint comprising a socket member having a cavity therein opening to the exterior thereof, a stud member having a ball portion received in said cavity and a stud projecting generally axially therefrom to the exterior of said socket member, said ball having a semi-spherical bearing surface, an abutment means on said ball portion in the equatorial area of said semispherical bearing surface, a bearing seat ring received in said cavity and having a semi-spherical surface complimentary to and bearing on at least a portion of said semi-spherical surface of said ball, and a restraining pin disposed in said cavity, journaled for rotation in said socket member, and constructed and arranged to bear on said abutment means to essentially prevent pivoting of said members relative to each other in one plane containing the longitudinal axis of said stud member while permitting pivoting of said members relative to each other in a plane at a right angle to said one plane and containing said longitudinal axis of said stud member and permitting said stud member and ball portion to rotate in unison on its longitudinal axis relative to said socket member.

4,332,501

STRUCTURAL NODE FOR LARGE SPACE STRUCTURES

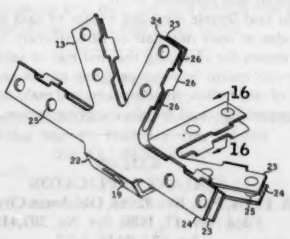
Paul Slysh, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Continuation of Ser. No. 99,263, Dec. 3, 1979, Pat. No. 4,308,699, which is a division of Ser. No. 930,823, Aug. 3, 1978.

This application Jan. 16, 1981, Ser. No. 225,549

Int. Cl.³ E04H *12/00*

U.S. Cl. 403—219 **1 Claim**



1. A structural node adapted to being stored in a stacked array and to being removed therefrom and connected to plural structural strut members which comprises:

a hub including a keyway adapted to accept a dog for retaining said hub in a stacked stored position and for selectively releasing said hub;

at least two elongated spring legs extending out from said hub;

each of said legs having an end and two sides and comprising first and second parallel spring leaves;

at least one pin fixed to each first leaf and extending toward the corresponding second leaf and into a hole in said second leaf; and

outwardly flared tabs along at least a portion of juxtaposed edges of said first and second leaves, which edges extend outwardly from said hub;

whereby flat strut ends having holes corresponding in diameter to said pins may be inserted between each set of first and second leaves from the sides of said legs.

4,332,502

APPARATUS FOR USE IN DRILLING

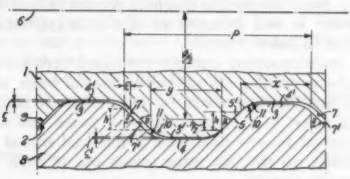
Philip J. Wormald, and Raymond J. Clemmow, both of Dronfield, England, assignors to Padley & Venables Limited, Yorkshire, England

Filed Dec. 19, 1977, Ser. No. 861,678

Claims priority, application United Kingdom, Jan. 11, 1977, 926/77; Mar. 29, 1977, 13114/77; Mar. 30, 1977, 13386/77

Int. Cl.³ E21B *17/02*

U.S. Cl. 403—343 **19 Claims**



1. A drill element of the kind specified in which the screw thread has a root and a crest which are interconnected through a main flank, an effective diameter selected from the range 25 millimeters to 65 millimeters and a pitch angle α and in which, in a section of the screw thread taken on the longitudinal axis thereof, the main flank is flat or substantially flat and is inclined at a flank angle β to a plane which is normal to the longitudinal axis and wherein α is determined, or substantially so, from the formula

$$\text{Sin } 2\alpha = \frac{-0.4 \text{ Cos } \beta \left(\frac{TU}{TC} - 1 \right)}{(0.04 + \text{Cos}^2 \beta) \left(\frac{TU}{TC} + 1 \right)}$$

where TU is the uncoupling torque, TC is the coupling torque, TU/TC is in the range 0.36 to 0.46; β is in the range of 30° to 65°, and α as determined is not greater than 9.5°.

4,332,503

APPARATUS FOR SIGNALING DIRECTION OF TRAVEL ON A ROAD BED

George H. Hurst, Jr., 16491 Harbour La., Huntington Beach, Calif. 92649

Filed Jun. 10, 1977, Ser. No. 805,296

Int. Cl.³ E01F *13/00*

U.S. Cl. 404—11 **18 Claims**

7. A road device for detecting direction of travel on a road bed, the device comprising:

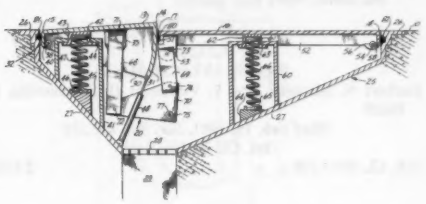
a ramp having first and second ends;

means for mounting the ramp in the road bed so its first end pivots about its second end, the first end of the ramp being pivotable between a raised position substantially above the surface of the road bed and a depressed position substantially flush with the surface of the road bed;

a platform having first and second ends;

means for mounting the platform in the road bed so its first end pivots about its second end and is adjacent to the first end of the ramp, the first end of the platform being pivotable between an upper position substantially flush with the surface of the road bed and a lower position below the surface of the road bed;

spring means for biasing the first end of the ramp to an intermediate position between its raised and depressed positions and applying a return force to the first end of the



ramp when it pivots from the intermediate position to the depressed position;

spring means for biasing the first end of the platform to its upper position and applying a return force to the first end of the platform when it pivots from its upper position to its lower position; and

means interconnecting the ramp and the platform for pivoting the first end of the ramp to its raised position when the first end of the platform pivots to its lower position and for locking the first end of the platform in its upper position while the first end of the ramp is in its depressed position.

4,332,504

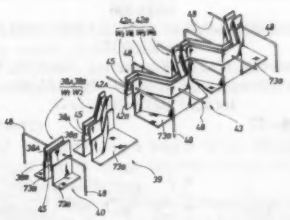
EXPANSION JOINTS FOR ROADS

Motonosuke Arai, 12-go, 4-ban, Iwazone-cho, Ashiya City, Hyogo Prefecture, Japan

Filed Nov. 5, 1979, Ser. No. 91,356

Int. Cl.³ E01C *11/04*

U.S. Cl. 404—68 **11 Claims**



1. An expansion joint for a roadway comprising:

first and second opposed upper wavy face plates forming a substantially regular wavy gap therebetween;

an elastic seal bonded between said first and second opposed upper wavy face plates;

a first lower wavy face plate partly overlapping and extending a substantial distance below a bottom portion of said first upper wavy face plate;

a second lower wavy face plate partly overlapping and extending substantially below a bottom portion of said second upper wavy face plate;

said first and second lower wavy face plates forming a substantially regular gap therebetween;

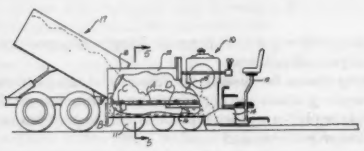
means for supporting said first and second lower wavy face plates an interval above a horizontal support surface;
said first and second upper wavy face plates being displaceable up and down with respect to said first and second lower wavy face plates whereby different thicknesses of roadway can be accommodated;
means for joining said first upper and first lower wavy face plates and for joining said second upper and said second lower wavy face plate; and
reinforcing materials affixed to said first and second upper wavy face plates and effective to maintain said expansion joint in position in said roadway in preparation for placing concrete behind first and second upper and first and second lower wavy face plates.

4,332,505

PAVER ATTACHMENT

Herbert N. Mauldin, Rte. 7, Viewmont Dr., Greenville, S.C. 29609

Filed Feb. 19, 1981, Ser. No. 236,284
Int. Cl.³ E01C *19/18*
U.S. Cl. 404—108 **2 Claims**



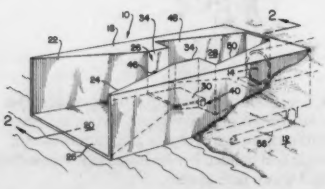
1. A paver having a hopper and means for feeding asphalt and the like rearwardly of the hopper by a flight chain assembly having transverse flight bars between spaced drive chains comprising:
a unitary frame carrying said flight chain;
a pair of longitudinally spaced shafts carried adjacent end portions of said frame;
a sprocket carried by each end of said shafts engaging said spaced drive chains for carrying said flight chain;
means removably positioning said frame and the flight chain carried thereby within the hopper;
removable covers carried by said hopper partially overlying said flight chain on each side thereof; and
means for driving said flight chain.

4,332,506

WAVE-AND-TIDE-PUMP APPARATUS AND METHOD THEREOF

Ottie H. Andrews, 1562 W. Katella Ave., Anaheim, Calif. 92802

Filed Jun. 26, 1980, Ser. No. 163,301
Int. Cl.³ E02B *9/08, 7/44*
U.S. Cl. 405—77 **5 Claims**



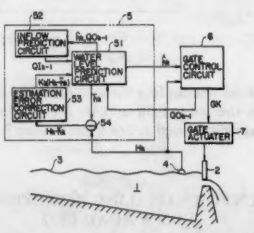
1. A wave-and-tide pump for installation along the shore line of a first body of water affected by wave-and-tidal action, to provide a constant flow of water to a second but smaller body of water which includes an inlet mouth, said pump and said inlet mouth being oppositely disposed to each other, said wave-and-tide pump comprising:
a housing structure having a funnel-like-inlet-mouth portion and a discharge opening oppositely disposed thereto, said inlet mouth being positioned to accept incoming water flow by means of tidal changes and wave action;
said mouth portion including a pair of inwardly converging side walls, and an inclined bottom floor extending inwardly and upwardly, providing an angular displacement substantially equal to or greater than the angle of the shore line of said first body of water;
a throated neck portion contiguously positioned aft of said mouth portion, whereby water is funneled from said mouth portion thereof to said neck portion, said throated neck portion being defined by oppositely disposed parallel side walls, and a rearward downwardly sloping bottom wall;
a reservoir chamber contiguously associated with said throated neck portion to receive water therefrom, said reservoir chamber being defined by a bottom wall having oppositely disposed side walls converging rearwardly and terminating inwardly at said discharge opening;
a unilateral flow-control means interposed between said inlet mouth and said throated neck, said means being operated by said waves entering said inlet mouth thereof;
wherein said unilateral flow-control means comprises:
a valvular-control gate hinged in the bottom of said throated neck portion; and
a floatation member attached to said gate, whereby said gate never drops below the level of the tide;
stop means mounted in said neck portion to limit the movement in one direction of said unilateral flow-control means; and
an interconnecting conduit connected between said discharge opening and said second body of water, whereby a continuous flow of water is transferred from the first body of water to the second body of water, and wherein a current flow is established within said second body of water, so that the water passes out through the inlet mouth thereof.

4,332,507

WATER LEVEL CONTROL SYSTEM FOR A RESERVOIR

Fumio Wakamori, Machida; Motohisa Funabashi, Kanagawa; Mamoru Kata; Takazo Hirano, both of Hitachi, and Mikihiko Onari, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,234
Claims priority, application Japan, Dec. 6, 1978, 53-149945
Int. Cl.³ E02B *7/20*
U.S. Cl. 405—92 **15 Claims**



1. A method for controlling the water level of a reservoir comprising the steps of:
a first step of determining the actual water level, the inflow rate and the outflow rate of the reservoir at each of a plurality of successive predetermined moments of time;
a second step of determining an estimated water level corresponding to a stored amount of water in the reservoir at each of said predetermined moments of time; and
a third step of controlling the outflow rate from each of said

successive moments of time until the next moment of time based upon the estimated water level and a target water level for each moment of time; and

wherein said second step includes determining the estimated water level corresponding to the stored amount of water at a given moment of time, based upon a change of the amount of water stored in the reservoir from the previous moment of time next preceding said given moment of time until said given moment of time, on the basis of said estimated water level determined at the previous moment of time, and further based upon a correction amount which is proportional to the difference between the sum of said change and said estimated water level at the previous moment of time and the actual water level detected at said given moment of time;

said change in the amount of water stored in the reservoir being detected from the difference between the inflow rate and the outflow rate at the previous moment of time and the water surface area of the reservoir.

4,332,508

SHIELD FOR TUNNELING AND MINING

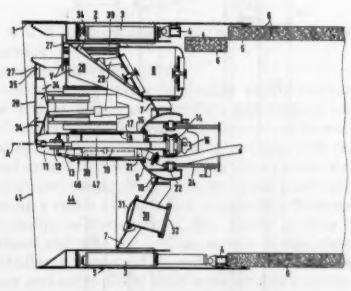
Wilfried Krabbe, Dreieich-Buchschlag, Fed. Rep. of Germany, assignor to Philipp Holzmann Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,216

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907768

Int. Cl.³ E21D *9/06*

U.S. Cl. 405—144 **18 Claims**



1. A shield for tunneling and mining, comprising means for forming a work chamber having an open front which in use is located at the work face from which material is to be removed; means in said work chamber for removing material from the work face; means for admitting into the work chamber a pressure medium which supports the work face against crumbling and collapse; and work face supporting elements comprising rack elements interiorly supported and positioned within said work chamber in spaced relation to said work face, said elements being movable within said work chamber so as to engage and be supported against said work face; said elements having a first and a second part, said first part, when in the interiorly supported position, being positioned transverse to the longitudinal axis of the cylindrical shield and said first part longitudinally displaceable relative to said shield axis; said second part being pivotable relative to said first part said elements being selectively movable into and out of an operative position in which they support the work face in at least parallel replacement of the support afforded by said pressure medium.

4,332,509

RISER PIPE SYSTEM FOR COLLECTING AND RAISING PETROLEUM PRODUCED FROM AN UNDERWATER DEPOSIT

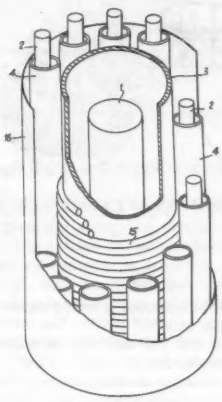
Remi Reynard, Neuilly-sur-Seine; Christian Athe, Le Mee, and Jean-Paul Aubert, Puteaux, all of France, assignors to Coflexip, Rueill Malmaison, France

Filed Jun. 10, 1980, Ser. No. 158,261

Claims priority, application France, Jun. 18, 1979, 79 15525

Int. Cl.³ E21B *17/01*; F16L *11/00*

U.S. Cl. 405—168 **6 Claims**



1. System for the collection and raising of petroleum produced from an underwater deposit, said system being of the type including a plurality of flexible pipes, and comprising a plurality of tubular sections, rigidly connected together and having essentially zero buoyancy, each section having internal conduits of a diameter to allow the passage of the flexible pipes, at least one of the said internal conduits comprising a tube having a reinforcing sheathing able to sustain the effects of longitudinal traction.

4,332,510

METHOD AND APPARATUS FOR RECOVERING A LENGTH OF AN ELONGATED BODY, SUBMERGED IN WATER

Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Apr. 1, 1980, Ser. No. 136,323

Claims priority, application Italy, Apr. 5, 1979, 21604 A/79

Int. Cl.³ F16L *1/04*

U.S. Cl. 405—171 **37 Claims**

1. Method for recovering a length of an elongated body from substantial depths below the free surface of a body of water, said method comprising:

lowering in said water a first unit having a float detachably secured to means for gripping said length and having a flexible, extensible element interconnecting the float and said means;

controlling the descent of said unit by applying a balancing force substantially equal to and opposing the force exerted by the weight of said unit, said balancing force being exerted by said float;

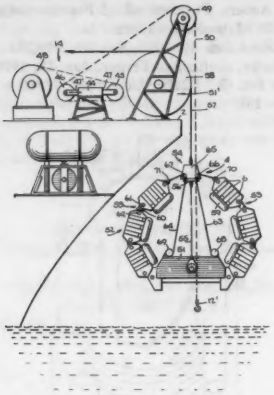
guiding and positioning said unit over said length;

detaching said float from said means while leaving them interconnected by said element, whereby said float ascends to said surface and extends said element;

operating said gripping means to cause it to grip said length;

with said first unit still in place with its gripping means gripping said length, lowering a second unit along said element to said first unit, said second unit also having

gripping means for gripping said length and said second unit being lowered along said element to a position such that said last-mentioned gripping means can grip said length;



operating said last-mentioned gripping means to cause it to grip said length; and

raising both said first unit and said second unit with said length gripped thereby.

4,332,511

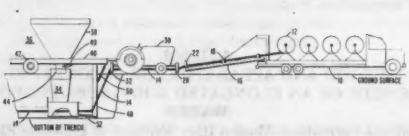
CABLE BURYING APPARATUS

Dennis K. Bradley, 3900 E. 15th St., Casper, Wyo. 82601; Harold R. Brewbaker, 6117 Becker La., Loveland, Colo. 80537, and Vern W. West, 3810 N. Taft Hill Rd., Fort Collins, Colo. 80524

Filed Apr. 9, 1980, Ser. No. 138,596

Int. Cl.[3] F16L *1/02*

U.S. Cl. 405—178 **4 Claims**



1. Apparatus for burying a plurality of cables in a previously excavated trench in a predetermined spatial relationship to each other surrounded by an initial backfill material, the apparatus comprising:

a cable supply vehicle for transporting a plurality of reels of cable for emplacement in the previously excavated trench;

cable guide means for receiving the plurality of cables from the cable supply vehicle and for guiding those cables into a cable bundle;

a sanding sled positioned within the previously excavated trench for receiving the cable bundle from the cable guide means, the sanding sled including forward guide means having a plurality of guide members for receiving the individual cables of the cable bundle in a predetermined spatial relationship to each other and rear guide means positioned adjacent the rearward portion of the sanding sled, the rear guide means having a plurality of guide members in substantial alignment with the guide members of the forward guide means and being positioned for receiving the individual cables of the cable bundle from the forward guide means and for maintaining the individual cables of the cable bundle substantially parallel to but spaced away from the side walls and bottom of the previously excavated trench and in the same spatial relationship to each other as established by the forward guide means, the sanding sled further including a sand chute conveying the initial backfill material, the sand chute being positioned between the forward and rear guide means and over the plurality of individual cables extending therebetween, the sand chute being adapted to convey the initial backfill material for flow surrounding the plurality of individual cables that extend below the sand chute in the area between the forward and rear guide means, the sanding sled further including adjustable backfill levelling means positioned adjacent the rear guide means for permitting the backfill material to be deposited into the previously excavated trench to a predetermined depth surrounding the plurality of individual cables of the cable bundle in their predetermined spatial relationship to each other; and

tractor means coupled to the sanding sled for pulling the sanding sled along the trench.

4,332,512

ARRANGEMENT FOR ERECTING COLUMNAR SUPPORTING ELEMENTS FOR UNDERGROUND EXCAVATIONS

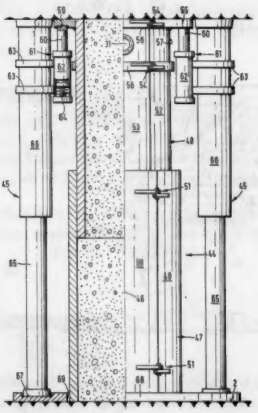
Peter Heintzmann, Bochum; Manfred Koppers, Duisburg, and Karlheinz Bohnes, Bochum, all of Fed. Rep. of Germany, assignors to Bochumer Eisenhuette Heintzmann GmbH & Co., Bochum, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,059

Claims priority, application Fed. Rep. of Germany, May 22, 1979, 2920645; May 22, 1979, 2920659

Int. Cl.[3] E21D *15/18, 15/22*

U.S. Cl. 405—290 **29 Claims**



1. An arrangement for erecting a columnar supporting element of a hardenable flowable material, for a roof of an underground excavation such as a mine, the arrangement comprising

a hollow casing for filling a hardenable flowable material to be hardened therein so as to form a columnar supporting element, said casing having a longitudinal axis and including upper and lower coaxial casing portions which are tubular and telescopable in all axial directions, each of said casing portions being composed of two open-ended semicircular sections, said upper casing portion having an annular collar provided with a bracket;

a pit prop extending between a roof and the floor of the excavation adjacent to said casing and having a shoulder and an axially displaceable sleeve engaging with said bracket;

means for holding said upper casing portion in contact with

a roof of an underground excavation, said holding means being arranged adjacent to said casing and longitudinally variable, said holding means being resiliently yieldable and formed as a helical pressure spring located between said shoulder and said sleeve of said pit prop;

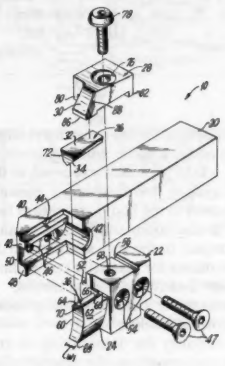
means for connecting the semi-circular sections of at least said lower casing portion with one another pivotally about a longitudinal pivot axis which is parallel to said longitudinal axis of said casing, and locking the same with one another.

4,332,513

FACE GROOVING TOOL

Thomas W. Gowanlock, Rochester, Mich., assignor to General Electric Company, Columbus, Ohio

Filed Jul. 24, 1980, Ser. No. 171,944
Int. Cl.³ B26D *3/06*
U.S. Cl. 407—101 **10 Claims**



1. A tool for machining circular grooves in a workpiece comprising:

an elongated shank member;

an arcuate support blade projecting axially outwardly from one end of said shank member, said support blade being defined by opposed radially inner and outer arcuate surfaces and opposed leading and trailing surfaces, with the longitudinal axes of said arcuate surfaces being parallel to the longitudinal axis of said shank member, said arcuate support blade having a radius of curvature substantially corresponding to the radius of curvature of the circular groove to be machined, and with the leading surface of said support blade including a V-shaped support groove defined by radially inner and outer planar sides coinciding in a vertex, with the radially outer planar side of said support groove being longer than the radially inner side, and with said vertex being disposed closer to said radially inner surface than to said radially outer surface of said support blade;

an elongated cutting insert having opposed leading and trailing surfaces, with the leading surface thereof being planar and with the trailing surface having a configuration substantially corresponding to the configuration of said V-shaped support groove of said support blade and being adapted to be received therein with one end of said insert projecting axially outwardly beyond said support blade; and

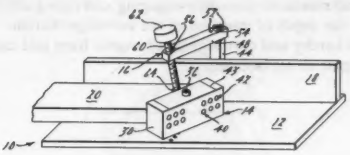
clamping means, removably connected to said shank member and having a bearing arm abutting the planar leading surface of said insert for maintaining said insert in said V-shaped support groove whereby in the operation of said tool the workpiece is rotated relative to said tool such that said projecting end of said insert machines a circular groove therein, with said arcuate support blade being adapted to fit within said machined groove thereby giving continuous support to said insert, and with said V-shaped groove functioning to give added support to the radially outermost portion of said insert.

4,332,514

DOWEL DRILL FIXTURE

Stephen J. Dergo, 7821 Timor St., Long Beach, Calif. 90808

Filed Dec. 5, 1979, Ser. No. 100,504
Int. Cl.³ B23B *47/28*
U.S. Cl. 408—103 **13 Claims**



1. An all-angle dowel drill fixture comprising:

a base plate;

a drill guide block having a vertical bore extending therethrough generally along the vertical axis thereof and further having at least one pair of horizontal bores each one of said pair adapted to guidingly receive a drill bit therethrough, each one of said pair being parallel to the other of said pair and each one of said pair being an equal distance from said vertical bore;

clamping means for positioning a workpiece against said drill guide block comprising a vertical post attached to, and extending upwardly from, said base plate, a horizontal member selectively pivotally attached to said vertical post and having an end portion spaced from said vertical post and with a threaded bore therein, said threaded bore extending generally downwardly canted toward said vertical post, and a rod threadably disposed in said threaded bore and having engaging means on the lower end thereof for engaging a workpiece and means on the upper end thereof for selectively rotating said rod to thereby move said engaging means toward and away from said workpiece; and

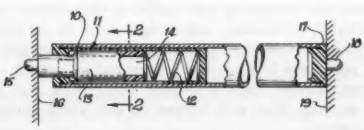
a fastener radially closely received in said vertical bore of said guide block and in an aperture fixedly associated with said base plate, said fastener pivotally connecting said block and said base plate on a selectively fixed pivotal axis.

4,332,515

CARGO SPRING BATTEN

Raymond B. Twyman, 669 Grey Cliffs Ave., La Puente, Calif. 91744

Filed Jul. 28, 1980, Ser. No. 172,858
Int. Cl.³ B60P *7/14;* B61D *45/00;* B63B *25/24*
U.S. Cl. 410—149 **6 Claims**



1. A cartridge-loaded cargo batten comprising:

(a) an elongated casing having a first and a second end;

(b) said first end defining an axially extended first nipple;

(c) said second end being open and said casing having a hollow portion entrant therefrom;

(d) a hollow cartridge inserted into said hollow portion, said cartridge comprising:

(i) an opening defined in said hollow cartridge one end thereof adjacent said second end of said casing and said cartridge having a second closed end;

(ii) an axially movable elongated plunger having a spring engaged end captured in said cartridge and mounting an elongated second nipple extending through said cartridge opening;

(iii) means between the spring engaged plunger end and said second closed end biasing said plunger axially relative to said cartridge out through said opening;

(iiii) means for releasibly engaging said casing and limiting the depth of insertion of the cartridge therein;

(e) whereby said cartridge is removable from said casing for repair or replacement.

4,332,516

METHOD AND APPARATUS FOR THROWING DOWN CONCRETE

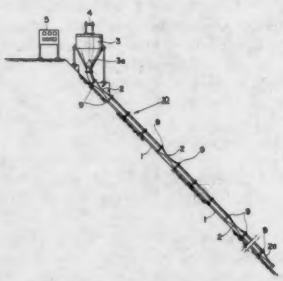
Yasushi Nakahara, Hachioji; Tadasuke Ohtomo, Hino; Masahiro Yurugi; Takumi Naitoh, both of Tokyo, and Kenichi Kaiho, Hino, all of Japan, assignors to Kajima Corporation, Tokyo, Japan

Filed Apr. 23, 1980, Ser. No. 143,133

Claims priority, application Japan, Nov. 5, 1979, 54-142911

Int. Cl.³ B65G *11/10, 11/20, 65/40*

U.S. Cl. 414—288 **10 Claims**



1. A method of transporting and passing concrete through a high head including a plurality of rigid pipes, at least one flexible collapsible tube, a hopper of wet concrete material, and an airtight valve, which comprises:

forming an airtight chute by fixing said rigid pipes along a path for transporting concrete such that said chute extends from a feeding level at the top of said high head to a discharge level near the bottom of said high head;

airtightly connecting said at least one flexible tube between adjacent rigid pipes in said chute;

airtightly connecting said hopper to said airtight valve;

airtightly connecting said airtight valve to the top of said chute at said feeding level such that said airtight valve is positioned between said hopper and said chute;

intermittently feeding discrete portions of wet concrete material from said hopper to said chute through said valve;

airtightly closing the top of said chute by said valve immediately after feeding each of said discrete portions of the concrete material to said chute; and

generating a negative pressure in said chute after passage of each of said discrete portions of the concrete material so that said tube is flattened between adjacent rigid pipes, thereby controlling the rate of descent of the concrete portions and maintaining the coherency of each portion.

4,332,517

CONTROL DEVICE FOR AN EARTHWORK MACHINE

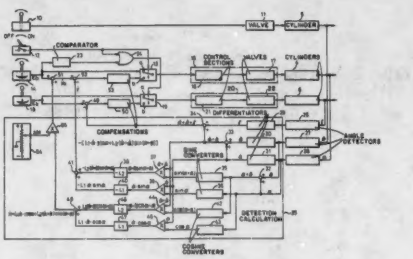
Michiaki Igarashi, Yokosuka; Tetsuya Nakayama, Fujisawa, and Shigemi Yamano, Isehara, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 4, 1979, Ser. No. 81,886

Claims priority, application Japan, Oct. 6, 1978, 53-123775

Int. Cl.³ E02F *3/32*

U.S. Cl. 414—699 **8 Claims**



8. A control device for use in earthworking equipment of the type having a body, a boom which is pivotally secured to the body, an arm which is pivotally secured to the boom, a bucket pivotally secured to the arm, boom means for pivoting the boom with respect to the body, arm means for pivoting the arm with respect to the boom and bucket means for pivoting the bucket with respect to the arm, said control device comprising:

first control means for manually controlling one of the boom means, arm means and bucket means;

detection means for detecting the pivotal positions of the boom, arm and bucket;

arithmetic circuitry for determining, in response to the detected pivotal positions, the amount of movements of the two of the boom means, arm means and bucket means other than the manually controlled one necessary to move the edge of the bucket along a straight path; and

second control means for automatically controlling the two of the boom means, arm means and bucket means other than the manually controlled one in accordance with the output of the arithmetic circuitry.

4,332,518

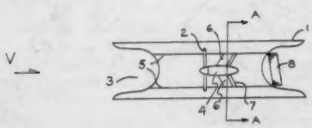
MULTIFUNCTIONAL TARP ROTOR STRUT VANES

Alfred L. Weisbrich, 76 Mayflower Rd., Windsor, Conn. 06095

Continuation-in-part of Ser. No. 971,924, Dec. 21, 1978, Pat. No. 4,288,199. This application Jun. 12, 1981, Ser. No. 273,006

Int. Cl.³ F03D *1/02*

U.S. Cl. 415—2 R **10 Claims**



1. A power generating device comprising:

a fluid flow velocity augmentor structure means being substantially the shape of a concentric interior section of a hollow toroid of general arbitrary cross-section in both a vertical and horizontal planes, meaning that in both a vertical and horizontal plane cross-sections may not be limited to circular arc and circular sections respectively, providing thereby open peripheral fluid flow channel means and defining augmented flow velocity regions about the exterior periphery of said fluid flow augmentor

structure wherein a plurality of interconnected fluid impact impellers are mounted within said peripheral fluid flow channel;

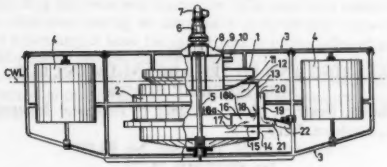
plural multi-functional support strut vane means, mounted between the fluid flow augmentor structure and peripheral fluid impact impeller system assembly for support and attachment of said fluid impact impeller system to said fluid flow augmentor structure, and as a fluid dynamic impeller system yaw positioning, stabilizer and control means, and as a flow channeling means of augmented flow about the peripheral fluid flow augmentor channel means.

4,332,519

OIL COLLECTING APPARATUS

Gösta Walin, L. Montörsgatan 3, Västra Frölunda, Sweden (S-421 68)

Division of Ser. No. 898,079, Apr. 20, 1978, Pat. No. 4,186,095. This application Jan. 29, 1980, Ser. No. 116,648
Claims priority, application Sweden, Apr. 27, 1977, 7704814
Int. Cl.³ F04D *29/18*
U.S. Cl. 415—52 **4 Claims**



1. A hollow vortex-producing and maintaining rotor adapted for rotation in an apparatus for separating and collecting floating pollution from a surface-contaminated liquid, the rotor comprising:

a sidewall substantially enclosing the interior of the rotor;

an open upper end defining an inlet to said rotor interior;

lower outlet means for discharging liquid from said rotor interior; and

vaned inner pump means in said rotor interior comprising a plurality of annularly arranged pumping chambers attached to the inside of said sidewall for recirculating a portion of the liquid near the bottom of the rotor back toward said inlet to suppot the liquid vortex, wherein said pumping chambers are defined by spaced annular upper and lower plates attached to said sidewall above said outlets, an inner plate joined to the inner edges of said upper and lower plates, and a plurality of upstanding annularly spaced radial vanes dividing the annular space between said sidewall and said plates into chambers having an outlet in said upper plate adjacent to said sidewall and an inlet in said lower plate adjacent to said inner plate.

4,332,520

VELOCITY PUMP REACTION TURBINE

Palmer A. House, Walnut Creek, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 29, 1979, Ser. No. 98,450
Int. Cl.³ F01D *1/18*
U.S. Cl. 415—63 **6 Claims**

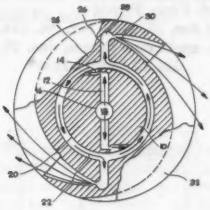
1. A velocity pump reaction turbine having the operating characteristic of maximum efficiency at finite speed, for converting thermal energy from a hot liquid at or above its saturation pressure, comprising:

a first shaft;

an inner velocity pump rotor connected to the first shaft and rotating therewith, the velocity pump rotor having an inlet port at the center, a plurality of first radial passageways extending from the inlet port, and a plurality of first liquid nozzles located on the periphery of the pump rotor at outer ends of the first radial passageways;

a second shaft;

an outer reaction turbine rotor connected to the second shaft and rotating therewith, and positioned concentrically around the velocity pump rotor, the reaction turbine rotor having a plurality of second radial passageways extending from an inner surface of the reaction turbine rotor, and a plurality of second nozzles located on the periphery of the turbine rotor at outer ends of the second radial passageways;



a housing enclosing the pump rotor and concentric turbine rotor, and defining therewith an annular space therebetween; and

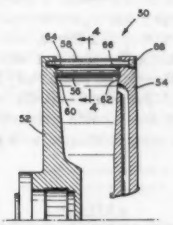
interconnecting drive means between the first and second shafts to drive the pump rotor from the turbine rotor in the same direction as the turbine rotor and at a speed at which hot liquid at or above its saturation pressure which is flowed into the inlet port of the pump rotor is pumped through the first radial passageways and first liquid nozzles into the annular space with a fluid velocity matching the tangential velocity of the outer turbine rotor at its inner surface.

4,332,521

HIGH SPEED JET ROTATING CASING APPARATUS

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Feb. 11, 1980, Ser. No. 120,188
Int. Cl.³ F04D *1/12*
U.S. Cl. 415—189 **5 Claims**



1. In a pitot hydrodynamic device having a rotary casing mounted for rotation about an axis, a fluid supply inlet connected between the interior of the rotary casing and a source of fluid to be pressurized, a pressurized fluid discharge duct, and a pitot tube extending radially from the axis of rotation in the casing and having adjacent its outer end an inlet facing in a direction opposite to the direction of rotation of the rotary casing and in fluid communication through the pitot tube with the discharge duct, the rotary casing comprising: a plurality of spaced-apart tapered discs mounted for rotation about the axis and forming end walls of the casing; said discs tapering in cross-section to a minimum thickness at their respective peripheries; and a side wall extending between and attached to

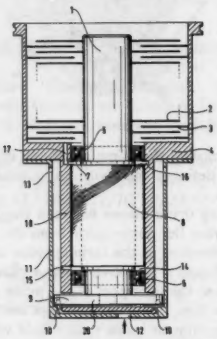
the peripheral portions of said tapered discs to enclose the pitot tube, said side wall being formed by a plurality of radially spaced concentric rings and being secured to said discs by a plurality of axially parallel bolts disposed between said concentric rings.

4,332,522

HARD VACUUM PUMP

Claude Saulgeot, Veyrier du Lac, France, assignor to Societe Anonyme dite Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jan. 21, 1980, Ser. No. 114,141
Claims priority, application France, Jan. 19, 1979, 79 01317
Int. Cl.³ F01D *1/36*
U.S. Cl. 415—90 **3 Claims**



1. A hard vacuum rotary pump, said pump including a cylindrical pump body, said pump body including a cylindrical sleeve extending from one end thereof and coaxial therewith, a shaft rotatably mounted within said sleeve and including a portion extending axially beyond said sleeve within said pump body, a vacuum pump rotor (2) mounted to said shaft interiorly of said pump body, a motor (20) disposed on the outside of said pump body and connected to the pump rotor by said shaft, a grooved dynamic molecular seal (8) within said sleeve for sealing said shaft, the improvement wherein said shaft is supported firstly by an outer bearing (6) disposed on the outside of said pump body (4) within said sleeve, and at one end of said grooved dynamic molecular seal and secondly by an inner bearing (5) disposed inside the pump body (4) at the opposite end of said grooved dynamic molecular seal and in direct communication with the vacuum pressure prevailing inside said pump body and being lubricated with grease.

4,332,523

TURBINE SHROUD ASSEMBLY

Raymond Smith, Monclova, Ohio, assignor to Teledyne Industries, Inc., Los Angeles, Calif.

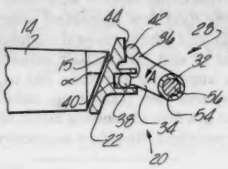
Filed May 25, 1979, Ser. No. 42,331
Int. Cl.³ F04D *29/08*
U.S. Cl. 415—126 **17 Claims**

1. A shroud assembly for use with an airfoil rotatably mounted in a housing, said shroud assembly comprising:

an annular shroud, the inner periphery of said shroud conforming to the outer periphery of the airfoil;

means for mounting said shroud to the housing coaxially around the spaced radially outwardly from the airfoil whereby a clearance is provided between the shroud and the airfoil; and

said mounting means comprising bell crank means pivotally mounted to said housing and responsive to thermal expansion of the shroud for moving said shroud in a first direction toward said airfoil to thereby reduce the clearance between said shroud and said airfoil.

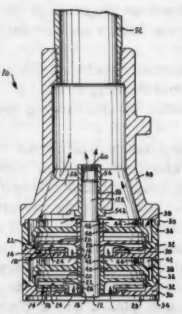


4,332,524

BEARING AND FILTER ARRANGEMENT FOR SUBMERSIBLE PUMPS

Roy Smith, Beatrice, Nebr., assignor to Dempster Industries, Inc., Beatrice, Nebr.

Filed Nov. 29, 1979, Ser. No. 98,597
Int. Cl.³ F01D *25/22*
U.S. Cl. 415—176 **4 Claims**



1. In a submersible pump having a housing with inlet and discharge ends and a fluid flow passage between said ends, a rotary drive shaft in the housing having an upper end, and an impeller mounted on said shaft for rotation therewith to pump fluid through said passage from the inlet end to the discharge end, the improvement comprising:

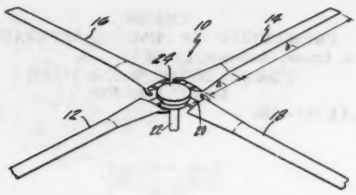
a hollow sleeve bearing supported on the housing and receiving the upper end of said shaft to assist in maintaining the alignment thereof, said shaft fitting loosely in said sleeve bearing to provide a clearance space communicating with said flow passage to permit fluid flow between said shaft and bearing for lubrication purposes; and

a filter element mounted in said sleeve bearing above the upper end of said drive shaft, said filter element being formed of a porous substance restricting fluid flow through said clearance space while permitting fluid flow therethrough in sufficient quantity to lubricate the shaft and bearing, said filter element substantially preventing abrasive materials in the fluid such as sand and the like from passing downwardly through said filter element into said clearance space.

4,332,525
MATCHED STIFFNESS ROTOR FLEXBEAM AND BLADE SYSTEM

Marvin C. Cheney, Jr., Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 3, 1979, Ser. No. 99,820
Int. Cl.³ B64C 27/38
U.S. Cl. 416—134 A **12 Claims**

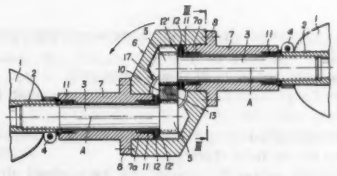


1. A rotary blade system comprising a composite flexbeam with in-plane and out-of-plane stiffnesses approximately equal extending between and connected to at least two rotor blades, the flexbeam having an essentially symmetrical cross-section and extending at least the entire length of the inboard portion of the blades and the blades securely affixed to the flexbeam at the outboard portion of the blades, the blade system having a primary in-plane frequency less than the primary rotor frequency.

4,332,526
VARIABLE PITCH PROPELLERS

Raimund Culk, Varenaweg 1, A 8043 Graz, Austria

Filed Sep. 14, 1978, Ser. No. 942,421
Claims priority, application Austria, Sep. 19, 1977, 6705/77
Int. Cl.³ B64C 11/32
U.S. Cl. 416—166 **6 Claims**

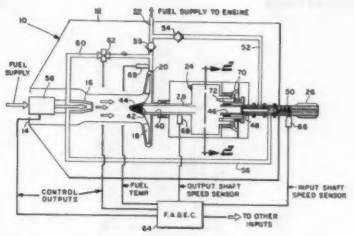


1. A variable pitch propeller comprising:
a hub;
an axially slidable tooth rack centrally mounted in said hub;
at least two blades mounted to said hub, each of said at least two blades having an inner end mounted adjacent to said axially slidable tooth rack and a longitudinal axis extending through said inner end;
a crown of peripheral teeth mounted on said inner ends of each of said at least two blades, said crown of peripheral teeth further being arranged at a right angle to said longitudinal axis of each of said at least two blades, said crown of peripheral teeth having tooth flanks meshing with said axially slidable tooth rack;
means for sliding said axially slidable tooth rack in said hub to rotate each of said at least two blades about said longitudinal axis to set the pitch of said at least two blades;
means for eccentrically displacing said crown of peripheral teeth of one of said at least two blades relative to said axially slidable tooth rack in order to adjust said tooth flanks of said crown of peripheral teeth relative to said axially slidable tooth rack for the adjustment of the play between said crown of peripheral teeth and said axially slidable tooth rack so that said at least two blades will maintain the set pitch of the variable pitch propeller; said means for eccentrically displacing further comprises a single, elongated tubular bearing bush mounted to each of said blades adjacent to each of said inner end of each of said at least two blades, said tubular bearing bush having a bore coaxially aligned with said longitudinal axis, said bearing bush further being rotatably adjustably mounted in said hub in order to adjust said crown relative to said rack; and
a thrust bearing having a terminal disc, said terminal disc having a diameter larger than said crown of peripheral teeth, each of said terminal discs on said blades further facing said crown of peripheral teeth and further forming a lateral guide for said tooth rack.

4,332,527
VARIABLE SPEED CENTRIFUGAL PUMP

Richard J. Moldovan, Avon, and Harold D. Davis, Ashland, both of Ohio, assignors to Lear Siegler, Inc., Elyria, Ohio

Filed Aug. 10, 1979, Ser. No. 65,527
Int. Cl.³ F04B 49/00
U.S. Cl. 417—15 **24 Claims**



1. A variable speed, variable output pump for an aircraft fuel system comprising a housing having a main inlet and a main outlet, a jet pump nozzle downstream of said main inlet, an impeller downstream of said jet nozzle and in fluid series therewith, positive displacement pump means for controllingly, drivingly connecting said impeller to the aircraft engine, the speed of said impeller relative to engine speed being variable in response to the discharge flow rate of said pump means, and valve means for controlling the discharge flow rate of said pump means thereby to vary impeller speed relative to the engine speed and for directing discharge flow of said pump means to said main outlet and to said jet nozzle to provide motive flow therefor.

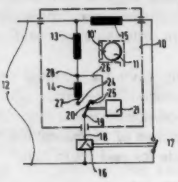
4,332,528
COMPRESSION TYPE REFRIGERATION DEVICE

Karl Hammele, Giengen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 120,072
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2910966
Int. Cl.³ F04B 49/06
U.S. Cl. 417—45 **5 Claims**

1. A compression type refrigerating device including a compressor defining a pressure space, a hermetically sealed housing communicating with said pressure space, an asynchronous motor arranged in said housing and having a main field winding connectable to a power source for driving said compressor and an additional field winding, a pressure sensitive switch

arranged in said housing and operable for intermittently connecting said additional field winding in series with said main



field winding in response to a predetermined pressure level in said housing.

4,332,529

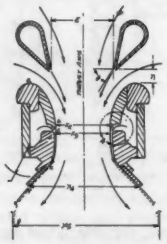
JET DIFFUSER EJECTOR

Morton Alperin, 6000 Lockhurst Dr., Woodland Hills, Calif. 91364

Continuation of Ser. No. 603,361, Aug. 11, 1975, abandoned. This application Jan. 28, 1980, Ser. No. 116,649

Int. Cl.[3] F04F *5/16, 5/44*

U.S. Cl. 417—54 **20 Claims**



1. An ejector for thrust augmentation including an ejector having a converging inlet section for mixing fluids and a diffusing section downstream from the inlet section for diffusing the mixed fluids,

primary injection nozzle means arranged in a preselected spaced relationship with the ejector inlet section of the ejector, and at an acute angular relationship with respect to the normal to the thrust axis of the ejector for directing a flow of pressurized fluid to flow into the ejector and permitting a flow of ambient fluid to be induced into the ejector through the space between the primary nozzle means and the inlet section and through the space between the primary nozzle means to be mixed with fluid injected into the ejector, the acute angle is θ and falls within the following limits: 60 degrees $>\theta>$20 degrees,

the preselected spacing being determined on the basis of the pressure and temperature of the preselected fluids to be mixed, and

means for supplying pressurized fluid to the primary injection nozzle means.

13. A method for operating an ejector for maximal thrust augmentation wherein the injection means comprises a pair of injection nozzles including the steps of providing an ejecting structure,

arranging injection means at a preselected spaced relationship with the sides of the inlet section of the ejecting structure and at a preselected acute angular relationship to the normal to the thrust axis of the ejector,

injecting a pressurized fluid into the ejecting structure through the injection means to cause the injected fluid to mix with the ambient fluid induced into the ejecting structure through the spaces between the injection nozzles and the ejecting structure;

providing diffusing jet means for the ejecting structure downstream of the pair of injection nozzles for diffusing the mixed fluids and avoiding separation in the downstream ejecting structure diffusing section, and injecting a diffusing fluid into the diffusing jet means.

4,332,530

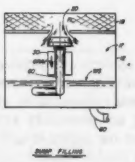
PRESSURIZED AIR PUMPING APPARATUS

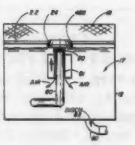
Pat A. Laster, Opelousas, La. 70503

Filed Jan. 29, 1980, Ser. No. 116,611

Int. Cl.[3] F04F *1/06*

U.S. Cl. 417—130 **19 Claims**





1. A pressurized air pumping apparatus comprising:

a. a fluid receiving sump tank;

b. an inflow opening having a valve seat;

c. discharge conduit means for discharging fluid from said sump tank;

d. a source of compressed air for pressurizing said sump tank and connectable thereto;

e. conduit means for introducing pressurized air into the interior of said sump tank, said conduit means providing discharge port means for transmitting compressed air from said conduit means into said sump tank, said discharge port means being disposed within the confines of said tank;

f. valving member means movably mounted within said sump tank between said seat and said discharge port means for sequentially sealing said conduit means at said discharge port means during the filling of said tank, and said inflow opening at said valve seat during the discharge of fluids from said tank, said valving member means being movable within said sump tank between a first open flow position removed from said seat and said inflow opening allowing fluid flow into said tank, simultaneously sealing said discharge port means, and a second closed flow pumping position sealing said inflow opening but removed from said discharge port allowing compressed air to fill and pressurize said tank at said closed flow pumping position; and

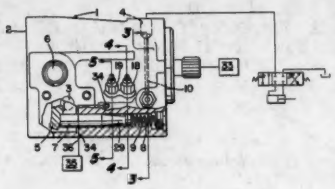
g. float means attached to said valving member means and moving therewithin for buoying said valving member responsive to the addition of fluid to be pumped to said sump tank, the buoying of said valving member urging said valving member toward said closed flow position.

4,332,531

VARIABLE DISPLACEMENT PUMP WITH TORQUE LIMITING CONTROL

Walter E. Marietta, Mentor, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 28, 1980, Ser. No. 116,330
Int. Cl.³ F04B 49/00
U.S. Cl. 417—218 14 Claims



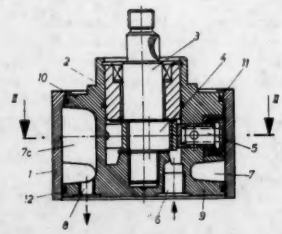
1. A variable displacement pump comprising pump means, high and low fluid pressure zones operatively associated with said pump means, displacement adjusting means including a fluid pressure operated member changing the displacement of said pump means in response to increase in fluid pressure in said high pressure zone, a modulator valve having means controlling fluid communication between said member and at least one of said pressure zones, said modulator valve defining a pressure chamber, means establishing metered fluid communication between said high pressure zone and said pressure chamber, compensating means operative, upon increase of fluid pressure in said pressure chamber to a predetermined value, to intercommunicate said pressure chamber and said low pressure zone for movement of said modulator valve and for movement of said member in a displacement decreasing direction, and said compensating means including means changing said predetermined value in response to changes in the rotational velocity of said pump means.

4,332,532

PISTON PUMP, ESPECIALLY RADIAL PISTON PUMP

Georg Liska, Zimmerbach, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Oct. 30, 1979, Ser. No. 89,482
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1978, 2848841
Int. Cl.³ F04B 1/18
U.S. Cl. 417—273 4 Claims



1. In a multipiston pump having a hub encompassed by a housing and said hub having a plurality of angularly spaced pumps spaced around a central axis thereof;

the improvement which comprises;

said hub having a common pulsator chamber extending therearound connecting directly to said pumps and being recessed from the hub exterior into said hub;

said hub having additional pulsator chamber volumes recessed therein from the exterior thereof intermediate said pumps and merging with said common pulsator chamber to effect an increase in pulsator chamber volume;

said housing encompassing said hub and peripherally closing said common pulsator chamber and said additional pulsator chamber volumes;

said hub having an inlet communicating with said pumps and an outlet communicating with said common pulsator chamber; said common pulsator chamber communicating with said additional pulsator chamber volumes and being located between said outlet and said pulsator chambers.

4,332,533

FLUID PUMP

Harry L. Spears, Houston, Tex., assignor to Watson International Resources, Ltd., Houston, Tex.

Filed Sep. 13, 1979, Ser. No. 75,318
Int. Cl.³ F04B 7/00
U.S. Cl. 417—513 4 Claims

1. A fluid pump, comprising:

a generally cylindrical hollow housing, forming a generally cylindrical bore;

said housing having upper and lower sections and an interior section which divides said bore into top and bottom bore portions;

a solid rod extending through said top bore portion and into said bottom bore portion, said rod having upper and lower stops mounted with said rod and positioned in said bottom bore portion;

said rod adapted for connection to reciprocal power means to impart reciprocal motion including a rod upstroke and a rod downstroke;

lower cylindrical valve means mounted on said rod for slidable movement with respect to said rod within said bottom bore portion between said first and second stops;

said rod lower stop preventing said lower cylindrical valve means from moving past said lower stop and forming a seal therewith during said rod upstroke;

said rod upper stop preventing said lower cylindrical valve means from moving past said upper stop during said rod downstroke, said lower cylindrical valve means being separated from said lower rod stop during said downstroke and including means allowing fluid flow therethrough;

upper cylindrical valve means mounted with said rod for slidable movement with respect to said rod within said top bore portion; said slidable movement along said rod between up and down positions being in response to pressure above and below said upper cylindrical valve means in said top bore portion;

said upper housing section having outlet means for providing fluid communication outward of said housing positioned in said top bore portion, which outlet means is sealed by said upper cylindrical valve means in said down position during said rod downstroke and at least partially unsealed during a portion of said rod upstroke when said upper cylindrical valve means is in said up position;

said housing lower section having side inlet means for allowing fluid flow into said bottom bore portion;

said housing lower section terminating in a bottom inlet allowing fluid to flow into said bottom bore portion;

said lower cylindrical valve means being removed from said lower rod stop during said rod downstroke to cooperate with said bottom inlet to allow fluid to flow through said lower cylindrical valve means into said bottom bore portion above said lower cylindrical valve means, and said side inlet means being open near the end of said rod downstroke to further allow fluid to flow into said bottom bore portion above said lower cylindrical valve means;

said outlet means being cylindrically shaped holes in said upper housing section which holes are directly outwardly and upwardly; and

the total cross-sectional area of said cylindrically-shaped outlet holes is less than the cross-sectional area of said housing bore.

4,332,534
MEMBRANE PUMP WITH TILTABLE ROLLING PISTON PRESSING THE MEMBRANE

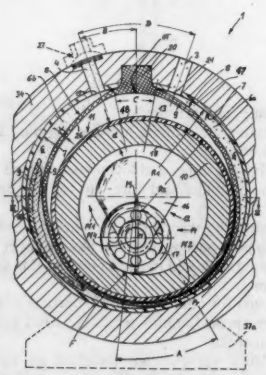
Erich Becker, Glöcklehofweg 13, 7812 Bad Krozingen, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,951

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853916; Mar. 24, 1979, 2911609; Nov. 8, 1979, 2945042

Int. Cl.³ F04C *5/00*

U.S. Cl. 418—45 **35 Claims**



1. In a membrane pump, a combination comprising a housing having an axis and an inner annular surface extending about said axis; an annular membrane within said housing and having an outer surface defining with said inner surface of said housing an annular working space; and means rotatable in a predetermined direction for pressing the outer surface of said annular membrane at a revolving sealing region against said inner surface of said housing, said rotatable means comprising an annular rolling piston having an inner surface and rigid eccentric drive means engaging said inner surface of said rolling piston with a line contact, wherein in any radial plane including the axis of said housing and the respective line of contact the outer radius of said eccentric drive means plus the wall thickness of said annular piston plus the wall thickness of said membrane is slightly smaller than the radius of said inner surface of said housing so as to provide a small clearance between the outer surface of said membrane and said inner surface of said housing, whereby during rotation of said rotatable means said rolling piston will tilt with respect to said eccentric drive means and said inner surface of said housing to press a portion of said annular membrane angularly displaced from said line of contact and forming said sealing region against the inner surface of said housing.

4,332,535
SCROLL TYPE COMPRESSOR HAVING AN OIL SEPARATOR AND OIL SUMP IN THE SUCTION CHAMBER

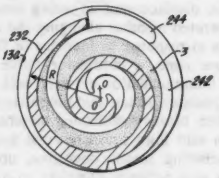
Kiyoshi Terauchi, and Masaharu Hiraga, both of Isesaki, Japan, assignors to Sankyo Electric Company Limited, Isesaki, Japan

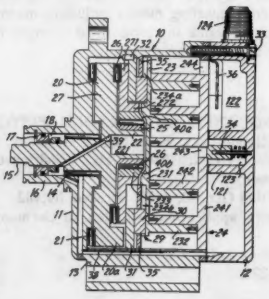
Filed Dec. 13, 1979, Ser. No. 103,393

Claims priority, application Japan, Dec. 16, 1978, 53-155198; Feb. 17, 1979, 54-16743

Int. Cl.³ F04C *18/02, 29/02*

U.S. Cl. 418—55 **7 Claims**





1. A scroll type compressor unit comprising:

a compressor housing having a fluid inlet port and a fluid outlet port, said housing includes a rear end plate, said rear end plate having a fluid suction chamber connected to said fluid inlet port and a fluid discharge chamber connected to said fluid outlet port, a fixed scroll member fixedly disposed within said compressor housing and having first end plate means lying in a substantially vertical direction to which first wrap means are affixed, a first chamber defined by the inner surface of said compressor housing and said first end plate means of said fixed scroll member and containing said first wrap means therein, an orbiting scroll member orbitally disposed within said first chamber and having second end plate means to which second wrap means are affixed, said first and second wrap means interfitting at an angular offset of 180° with a plurality of line contacts to define at least one sealed off fluid pocket which moves with a consequent reduction of volume thereof by the orbital motion of said orbiting scroll member, to thereby compress the fluid in the pocket, said first end plate means at an upper portion thereof being provided with a first hole outside said first wrap means and

adjacent to the outer terminal end of said second wrap means, a second hole at a position corresponding to the center of said first wrap means, said first hole being connected through said suction chamber to said fluid inlet port to thereby introduce the fluid from said inlet port into said first chamber so that a portion of the fluid enters the space between said outer terminal end portion of said second wrap means and the adjacent first wrap means to be compressed, with the other portion of said fluid flowing along said second wrap means into another space between the outer terminal end portion of said first wrap means and the adjacent second wrap means to be compressed, oil separator means disposed within said suction chamber to prevent said fluid from directly flowing into said first hole to thereby separate lubricating oil mixed in the fluid, an oil passageway connecting said first chamber and the lower portion of said suction chamber to return the separated oil into said first chamber, and said second hole being connected through said discharge chamber to said fluid outlet port so that the compressed fluid is discharged from said second hole and said outlet port.

4. A scroll type compressor unit comprising:

a compressor housing with a cylindrical inner surface, a fixed scroll member fixedly disposed within said compressor housing and having first end plate means to which first wrap means are affixed, the outer terminal end of said first wrap means extending on said first end plate means so that it engages the inner surface of said compressor housing, an orbiting scroll member orbitally disposed within said housing and having second end plate means to which second wrap means are affixed, said second wrap means having the same number of turns as said first wrap means with a portion thereof from its outer terminal end to a position so as to connect with the outer terminal end of said first wrap means having an outer contour of an arcuate curve of a radius equal to the length from its spiral center to the outer edge of its outer terminal end, first means for closing the gap between the outer peripheral end of said second end plate and said cylindrical inner surface of said compressor housing but permitting the orbital motion of said orbiting scroll member, said first and second wrap means interfitting at an angular offset of 180° with a plurality of line contacts to define at least one pair of sealed off fluid pockets which move with a consequent reduction of volume thereof by the oribital motion of said orbiting scroll member to thereby compress the fluid in the pocket.

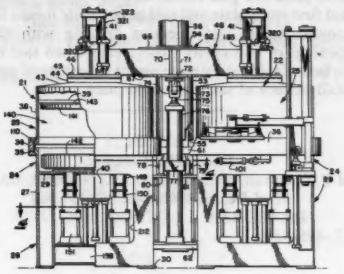
4,332,536

HYDRAULIC TIRE PRESS

Anand P. Singh, Youngstown, Ohio, and Daniel Schichman, Trumbull, Conn., assignors to NRM Corporation, Akron, Ohio

Filed Apr. 9, 1980, Ser. No. 138,589
Int. Cl.³ B29H *5/02, 5/08*
U.S. Cl. 425—33 **42 Claims**

1. A tire press comprising opposed heated mold parts, hydraulic fluid clamp means operative to maintain the mold parts together during cure, and cooling barrier means between the



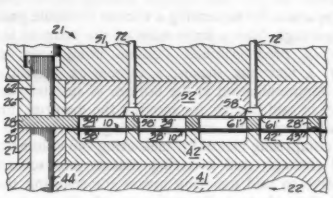
heated mold parts and the hydraulic fluid of said clamp means operative to protect such fluid from heat degradation.

4,332,537

ENCAPSULATION MOLD WITH REMOVABLE CAVITY PLATES

Dusan Slepcevic, 1240A Mountain View-Alviso Rd., Sunnyvale, Calif. 94086

Filed Jul. 17, 1978, Ser. No. 925,295
Int. Cl.³ B29C *1/00;* **B29D** *3/00, 31/00*
U.S. Cl. 425—121 **30 Claims**



1. Apparatus for encapsulating objects carried by a lead frame strip, said apparatus comprising:

first and second mold bases,

first and second opposed mold plates, said first mold plate being fixed to said first mold base and said second mold plate being fixed to said second mold base, said first and second opposed mold plates each having a generally planar mold surface thereon,

cavity plate means removably positionable between said first and second mold plates for holding a lead frame and said objects carried thereby in position relative to said mold plates and with said lead frame and objects all being completely spaced away from said first mold plate when said cavity plate means is positioned between said mold plates and flush against said mold surface of said first mold plate, said cavity plate means having spaced apart and generally planar outer surfaces, one of which is spaced away from the lead frame strip held by said cavity plate means and flush with the mold surface of said first mold plate and the other of which faces towards said mold surface of said second mold plate when said cavity plate means is positioned between said mold plates and said lead frame strip is held by said cavity plate means, said cavity plate means having openings therethrough from one outer surface thereof to the other surface thereof, said openings being in registration with said objects carried by said lead frame strip and held by said cavity plate means,

means forming an injection opening through said first mold plate to the mold surface thereof,

means for injecting fluid plastic through said injection opening to the mold surface of said first mold plate,

feed runner means formed into said mold surface of said first mold plate and gate means formed solely by and between said first mold plate and said cavity plate means for fluidly communicating said injection opening with all of said openings of said cavity plate means when said one outer surface of said cavity plate means is positioned against said mold surface of said first mold plate.

4,332,538

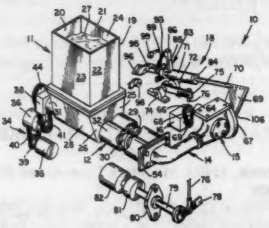
DOUGH DIVIDER

Sterret P. Campbell, 3095 Kingston Ct., Norcross, Ga. 30071

Filed Oct. 6, 1980, Ser. No. 194,066

Int. Cl.[3] A21C *3/04, 11/10;* **B29C** *17/10*

U.S. Cl. 425—140 **7 Claims**



1. Apparatus for separating a viscous flowable paste material such as dough from a large mass of the material into smaller masses of predetermined volume comprising a material hopper, a metering means, a dispensing nozzle, conveyor means communicating at the bottom of said hopper with the material in said hopper for moving the material through said metering means and said dispensing nozzle, said metering means comprising means for measuring the volume of material moved through said metering means, and severing means responsive to said metering means for severing the material moved through said dispensing nozzle from the oncoming material, said severing means comprising a paddle shaft rotatable about its longitudinal axis, a paddle mounted on one end portion of said paddle shaft, means for pivoting said paddle shaft about an axis intermediate the ends of said paddle shaft with the paddle reciprocatable in a vertically extending arc adjacent said dispensing nozzle, and means for rotating said paddle shaft about its longitudinal axis to oscillate the lower edge portion of said paddle into juxtaposition with said dispensing nozzle as the paddle moves downwardly across the nozzle and to oscillate the lower edge portion of said paddle away from said dispensing nozzle as the paddle moves upwardly across the nozzle.

4,332,539

PASTA MACHINE

Gian M. Zani, Domodossola, Italy, assignor to R. Bialetti & C. S.p.A., Omegna, Italy

Filed Jun. 5, 1980, Ser. No. 156,607

Claims priority, application Italy, Jun. 7, 1979, 23335 A/79

Int. Cl.[3] B01F *7/02*

U.S. Cl. 425—151 **16 Claims**

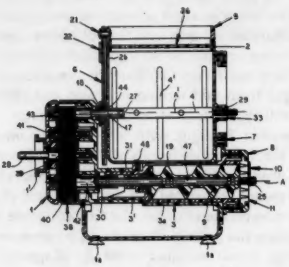
1. A pasta machine comprising:

a base formed with an extruder seat;

a gear transmission in said base and having an input projecting in one direction therefrom, a mixer output exposed in the opposite direction therefrom, and an extruder output also exposed in said opposite direction and provided at said extruder seat;

an extruder body having an extruder chamber provided internally with an auger element extending along and rotatable about an extruder axis, said body being formed with a window opening radially into said extruder chamber and with an axially open outlet;

a mixer body having a mixing chamber secured to said extruder body and communicating with said extruder chamber through said window, said mixer body being provided internally with a mixing rotor element extending along and rotatable about a mixer axis generally parallel to said extruder axis, and with a lid engageable over said mixer body and displaceable between an open position giving access to the interior of said mixing chamber and a closed position blocking such access, said lid having a pair of portions substantially closing said mixing chamber in said closed position and defining a narrow slot too narrow to pass a finger through, whereby fluent ingredients can be poured through said slot into said mixing chamber but a



user's finger cannot be inserted through said slot into said mixing chamber, said extruder body being releasably interfittable with said extruder seat with said auger element engaged with said extruder output and said mixing element being engaged with said mixer output; and

means for preventing said lid from moving from said closed into said open position when said extruder body is interfitted with said extruder seat, said means including a lever pivoted at one end on said lid and guided on said mixer body, said mixer body being formed at said mixer axis with a throughgoing hole through which said mixer output engages with said rotor element when said extruder body is fitted to said base, said lever extending across said hole and being formed with a throughgoing hole aligned therewith only in said closed position of said lid.

4,332,540

PRESS FOR MOULDING CONCRETE PRODUCTS

Yves H. Van de Caveye, Beauvais, France, assignor to Societe D'Exploitation des Etablissements Minato, France

Filed Jul. 1, 1980, Ser. No. 165,032

Claims priority, application France, Jul. 27, 1979, 79 19461

Int. Cl.[3] B28B *1/08;* **B29C** *1/16;* **B28B** *3/02, 7/22*

U.S. Cl. 425—182 **9 Claims**

1. A press for moulding concrete products, said press comprising

a frame having a base;

a substantially horizontal vibrating table supported by a vertical action unidirectional vibrating device;

means for supplying boards, one by one, onto said table;

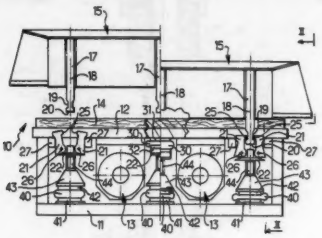
a mould movable vertically between a demoulding upper position and a moulding lower position in which said mould is pressed on one of said boards, said mould having lateral surfaces;

a concrete feeding means for feeding concrete to said mould;

connecting means for rigidly connecting said mould to said table during vibration of concrete in said mould, in a manner whereby said mould, said board and said table form a rigid unit assembly subjected to vibration; and

displacing means for moving said mould onto said table with a predetermined force, said displacing means being

mounted between said table and the base of said frame thereby preventing transmission of any vibration from said table to said frame during vibration or said concrete, said connecting means comprising fixing legs on said mould, extending toward said table and distributed on the lateral surfaces of said mould in a manner whereby said



mould is uniformly moved to and seated on the entire surface of said table, clamping means for clamping the lower end of each of said fixing legs, said clamping means being supported by said displacing means, and actuating means for selective clamping and unclamping said clamping means.

4,332,541

FILTERING ARRANGEMENT FOR THERMOPLASTICS MATERIALS

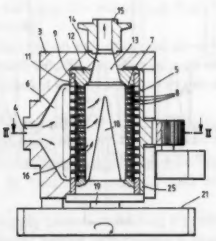
Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,640

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1979, 2947685

Int. Cl.³ B29B *5/02*

U.S. Cl. 425—197 **6 Claims**



1. Apparatus for extruding and filtering thermoplastic moulding materials, comprising:

(a) generally cylindrical casing means defining an inlet opening, an axially extending and radially projecting outlet aperture, and a central output opening;

(b) a cylindrical screen unit mounted in said casing means, said screen unit being substantially equal in axial length to said outlet aperture;

(c) drive means for continuously rotating said screen unit, and

(d) adjustment means for varying the effective width of said outlet aperture, whereby impurities adhering to said screen unit are ejected from said casing means by reverse flow of material through said rotating cylindrical screen unit during each revolution thereof, and outwardly through said outlet aperture.

4,332,542

ELECTRICALLY DRIVEN POTTER'S WHEEL

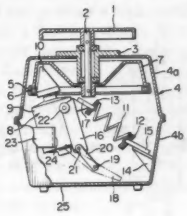
Norio Matsui, Kyoto, Japan, assignor to Shinpo Kogyo Kabushiki Kaisha, Kyoto, Japan

Filed Apr. 22, 1981, Ser. No. 256,573

Claims priority, application Japan, Apr. 23, 1980, 55-53989

Int. Cl.³ B29G *7/00*

U.S. Cl. 425—459 **2 Claims**



1. An electrically driven potter's wheel comprising:

a rotary molding table having a drive shaft,

a generally cup-shaped member being generally downwardly open and having a resilient ring along an inner surface of its lower edge, said member being rotatably mounted and fixed to said shaft,

an electric motor,

a conical roller directly coupled to said electric motor and arranged to frictionally engage said ring to drive said table, and

speed-changing means for moving said conical roller in a generally vertical direction relative to said ring to vary the effective contact radius of said roller.

4,332,543

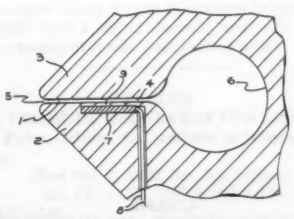
EXTRUSION DIE WITH MELT FLOW CONTROL

John L. Fulton, Northampton, and Harold H. Hopfe, Longmeadow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 15, 1980, Ser. No. 187,105

Int. Cl.³ B29F *3/04, 3/08*

U.S. Cl. 425—461 **5 Claims**



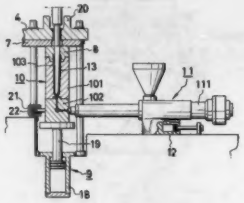
1. An extrusion die block having an extrusion passage defined by opposed surfaces, at least one of said surfaces being provided with heating means comprising a plurality of elongated heater elements located within the die block at a uniform distance, "d", of 1.5 to 10 mm. from the surface to be heated thereby, said elements being oriented in parallel, with the major axis of each in the direction of extrusion, the between centers spacing, "l", of adjacent heaters being from 2 to 10 cm. and the ratio of l to d being at least 8:1.

4,332,544

PARISON MOLDING APPARATUS IN AN INJECTION STRETCHING BLOW MOLDING MACHINE

Katashi Aoki, 6037, Ohazaminamijo, Sakakimachi, Hanishinagun, Naganoken, Japan

Filed Feb. 8, 1980, Ser. No. 120,086
Claims priority, application Japan, Feb. 16, 1979, 54-19370[U]
Int. Cl.³ B29C *17/07*; B29F *1/06*
U.S. Cl. 425—529 **3 Claims**



1. In an injection molding machine including a cavity mold which is movable for clamping said mold in a closed position for receiving injected material to be molded, said cavity mold having a gate at one side thereof and said machine including an injection device arranged to move toward and away from said gate in a direction generally perpendicular to the clamping movement of said cavity mold for applying a touching force to said gate during injection of said material, said motion of said injection device being provided by a fluid actuated device supplied with fluid from a pressure supply line; the improvement comprising:

a fluid actuated ram for applying a force to the side of said cavity mold opposite said gate, said force being equal and opposite to the touching force of said injection device, and said fluid actuated ram being arranged to operate in synchronism with the motion of said injection device by being in communication with said supply line.

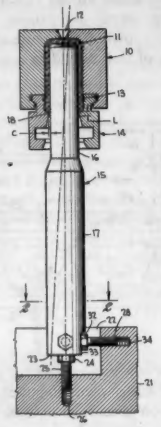
4,332,545

CORE PIN SUPPORT AND ADJUSTING ARRANGEMENT

Harry M. Cargile, Cheshire, Mass., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Dec. 23, 1977, Ser. No. 863,747
Int. Cl.³ B29C *1/06, 1/022*
U.S. Cl. 425—577 **23 Claims**

1. Mounting apparatus for mounting a core pin relative to an associated parison mold for forming plastic containers, said mold having a substantially closed end and said core pin fitting into said mold so as to form a closed end on a parison, said core pin having X, Y, and Z axes, said mounting apparatus comprising a support unit, and adjusting means for selectively adjust-



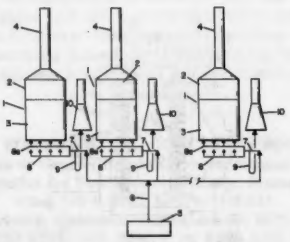
ing the position of said core pin in a respective plane of each of said axes relative to said support.

4,332,546

PROCESS AND APPARATUS FOR FURNACE OPERATION WITH GAS SEAL

George J. Bacsik, Fanwood, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 7, 1980, Ser. No. 147,396
Int. Cl.³ F23J *15/00*
U.S. Cl. 431—5 **25 Claims**



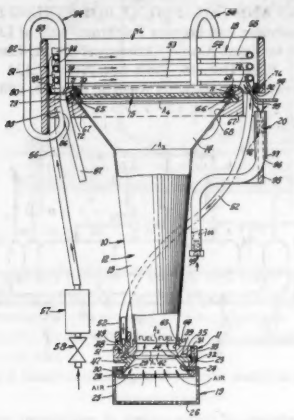
1. A method of operating a furnace in conjunction with a gas seal in which gas turbine exhaust containing oxygen (GTE) is used as preheated combustion air which comprises passing GTE in a duct to the furnace burners, operating evacuating means of the furnace including a damper to provide suction to remove flue gases and establish flow in the GTE duct, selecting a seal height of a leg in which GTE can come down from an outlet of said duct and plugging the leg below the GTE with colder atmospheric air of higher density than the GTE under the conditions of use to form a gas seal, by adjusting the setting of the furnace damper during operation to vary the duct pressure atop the seal within the range fixed by the selected seal height and the difference in density between the two gases; the gas seal being disrupted in case the flow of GTE is reduced, the atmospheric air then flowing to the burners under the suction controlled by the damper so that the furnace continues in operation.

4,332,547

THRUST AUGMENTER EJECTOR COMBUSTION DEVICE

James D. MacDonald, Jr., 4043 Harvest Hill, Apt. 2163, Dallas, Tex. 75234

Filed Oct. 1, 1979, Ser. No. 80,985
Int. Cl.[3] F23D *11/44*
U.S. Cl. 431—242 5 Claims



1. A combustion device for use with pressurized and zero pressure hot air appliances comprising:

(a) a fuel driven Coanda-type inlet nozzle including a primary nozzle having an inwardly converging wall portion which has an entrance end and an exit end;

(b) said inlet nozzle further including an annular fuel exit gap around the entrance end thereof, with said converging wall portion forming an outer annular boundary wall for said exit gap;

(c) a fuel supply means operatively connected to said inlet nozzle fuel exit gap for supplying fuel under pressure to said inlet nozzle;

(d) a diffuser having an exit end, and an entrance end operatively mounted on the exit end of said inlet nozzle;

(e) mounting bracket means secured to the diffuser at the exit end thereof;

(f) an annular flame-arrestor screen mounted in said diffuser at the exit end thereof:

(g) releasable attachment means for securing the flame-arrestor screen to said diffuser and said mounting bracket means;

(h) said fuel supply means including a preheater nozzle, and a fuel preheater means comprising a heat exchange coil;

(i) said fuel preheater means and preheater nozzle means being operatively mounted around the exit end of said diffuser;

(j) support bracket and rod means for mounting the fuel preheater means heat exchange coil around the exit end of said diffuser in a position spaced longitudinally and radially outward from the annular flame-arrestor screen;

(k) means for mounting said preheater nozzle means on said mounting bracket means, in a position around the outer side of said heat exchange coil and in a position spaced therefrom;

(l) said preheater nozzle means comprising a cylindrical tubular body which is covered on the inner face thereof by a liner having an outwardly curved exit end;

(m) a circular support ring mounted around the exit end of said diffuser and being secured to said mounting bracket means and having an integral, annular, arcuate inner peripheral portion which seats against the outer peripheral edge of the flame-arrestor screen and with the arcuate portion extending toward the exterior of the diffuser; and,

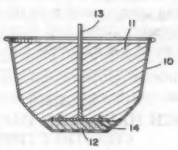
(n) whereby the expansion of fuel under pressure through said annular fuel exit gap around the primary nozzle inwardly converging wall portion forms a Coanda wall jet blowing of vaporized fuel around said primary nozzle converging wall portion for the induction of air down the center of the nozzle to maintain an attachment of the flow of vaporized fuel to the diffuser wall throughout the length thereof and produce a high entrainment ratio of air, and to maintain a fuel lean center flow of fuel and air to prevent a radiant flame form at, and directly above, the center of the flame-arrestor screen, so that said flows of mixed air and fuel are carried through the diffuser and through the flame-arrestor screen, and are ignited and burned exterior of the diffuser with the arcuate support ring functioning to direct the pattern of the flame radially outward into heat exchange relationship with the heat exchange coil, and said preheater nozzle liner functions as a flame stabilizer nozzle.

4,332,548

CANDLE SAFETY DISC AND CANDLE

Robert Linton, Midland Park, N.J.; Frank Asbury, Warwick, and Richard Artale, Middletown, both of N.Y., assignors to Avon Products, Inc., Suffern, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,901
Int. Cl.[3] F23D *3/16*; C10L *5/00*
U.S. Cl. 431—289 4 Claims



1. A transparent candle comprising an upper transparent candle composition layer, a lower transparent safety layer, and a wick in at least said upper transparent candle composition layer, said upper transparent candle composition layer comprising a thermoplastic polyamide resin and a flammable solvent therefor, said transparent safety layer being substantially noncombustible and comprising a thermoplastic polyamide resin, a solvent for said polyamide resin which is also compatible with said transparent candle composition, said polyamide resin and solvent being present in amounts to give said transparent safety layer a higher viscosity and melt temperature than said transparent candle composition layer.

4,332,549

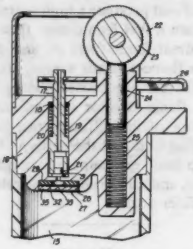
GAS PRESSURE REGULATOR FOR LIGHTERS

David L. Fuller, Atlanta, Ga., assignor to Scripto, Inc., Doraville, Ga.

Filed Oct. 4, 1978, Ser. No. 948,432
Int. Cl.[3] F15D *1/00*; F23Q *2/16*
U.S. Cl. 431—344 12 Claims

1. A gas pressure regulator for disposition in a housing member having a cavity including an end wall provided with a port comprising a pair of members of imprevious material disposed within the cavity in face to face opposed mating engagement, one of said members being firm, an elastomeric washer having a central aperture therein positioned under compression with said cavity for biasing said pair of members toward each other and presenting a flat compressive surface to said abutting members, one of said members having an aperture therethrough communicating with said port and being a thin plastic material having its mating surface textured and being

flexible across its width, said textured surface containing a multitude of extremely minute communicating interstices in the order of microns to fractional microns, thereby forming between said opposed mating surfaces an interstitial array of passages offering resistance to the gas flowing across the interface between said members, said gas flow being directed radially inward from the peripheries of said members to said firm member aperture, said elastomeric washer abutting said member with an aperture the central aperture of said elastomeric



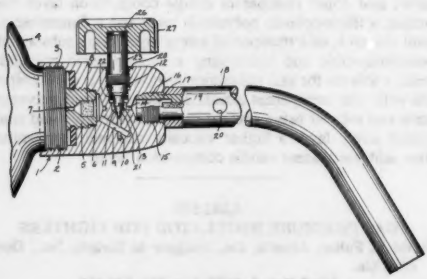
washer being larger in size than the aperture in said abutting member so that the degree of compression of said elastomeric washer that is transmitted to and hence by the compressed area of said thin flexible plastic member in turn controls the amount of mating surface area of said members that is under compression thereby determining the length of the gas flow path between, the mating compressed area of said members for regulating the gas pressure drop, and means providing a passageway for gas between the members and the housing.

4,332,550

GAS TORCH HAVING AN IMPROVED VALVE CONSTRUCTION

Richard S. Baumann, Glenbeulah, Wis., assignor to Western Industries, Inc., Milwaukee, Wis.

Filed Oct. 29, 1979, Ser. No. 89,192
Int. Cl.³ F23D *13/04*
U.S. Cl. 431—344 **1 Claim**



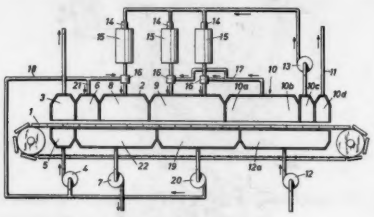
1. A gas torch construction comprising, a valve body to be connected to a container containing pressurized gas, an outlet tube connected to the valve body, passage means extending through the valve body and providing communication between the container and the outlet tube, whereby gas can flow from the container to the outlet tube, said valve body having an opening intersecting said passage means and having an internally threaded section, valve means for controlling the flow of fuel through said passage means and disposed within said opening, said valve means including a stem having an externally threaded section engaged with said internally threaded section, the outer end of said stem projecting outwardly of said valve body in a position to be manually rotated, the outer surface of the valve body bordering said opening having an annular uninterrupted depression, the portion of the valve body between the depression and said opening being depressed inwardly to deform the internal thread inwardly and prevent the external thread of the stem from being completely disengaged from said internal thread.

4,332,551

PROCESS AND EQUIPMENT FOR FIRING PELLETS

Johann Haslmayr, and Hannes Feichtner, both of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Dec. 16, 1980, Ser. No. 217,134
Claims priority, application Austria, Jan. 23, 1980, 339/80
Int. Cl.³ F27D *7/00*
U.S. Cl. 432—19 **12 Claims**



1. In a process of firing pellets in equipment comprising a combustion chamber and a firing zone wherein the pellets are fired with heat-treating gases at a predetermined firing temperature, the steps of

(a) burning fuel in the combustion chamber to produce high-temperature gases at an elevated temperature exceeding the predetermined firing temperature and sufficient to convert ashes produced during the burning of the fuel into a liquid slag,

(b) removing the liquid slag from the combustion chamber, and

(c) admixing cooler gases to the high-temperature gases outside the combustion chamber before the gases are supplied to the pellets to cool the gases to the predetermined firing temperature.

4,332,552

MOLDATHERM INSULATED PACEMAKER FURNACE AND METHOD OF MANUFACTURE

Karl H. Seelandt, Spring Grove, Ill., assignor to General Signal Corporation, Stamford, Conn.

Filed Oct. 3, 1980, Ser. No. 193,609
Int. Cl.³ F27B *5/14*; F27D *1/00*; F23M *5/00*
U.S. Cl. 432—209 **10 Claims**

1. An insulated furnace assembly comprising:

a plurality of interconnected modular panels of fibrous material comprising alumina and slica fibers having interconnecting highly gas permeable air pockets formed therein, said panels exclusively forming a furnance chamber;

means for heating said furnace chamber to a temperature from 500° F. to 2000° F.;

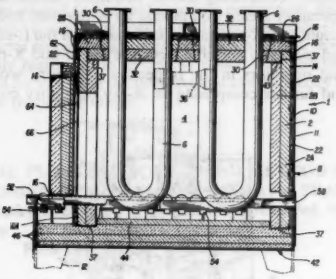
means for rapidly purging said furnace of residual air and water vapor wherein said purging means further comprises a furnace shell surrounding said fibrous material panels so as to form a space between said shell and said fibrous material panels;

means for circulating a first gas within said furnace chamber;

means for circulating a second gas within said space formed between said shell and said fibrous material panels such that said furnace chamber and said space are rapidly purged of said air and water vapor;

means for forcing said air and water vapor through said

fibrous material panels into said furnace chamber, wherein said forcing means further comprises means for pressurizing said first gas to a first pressure above atmospheric pressure and means for pressurizing said second gas to a second pressure equal to or greater than said first pressure



such that any portion of said air and water vapor which has migrated from said furnace chamber toward said space is forced back toward said furnace chamber;

frame means upon which said fibrous material panels are mounted; and

means for interconnecting said fibrous material panels.

4,332,553

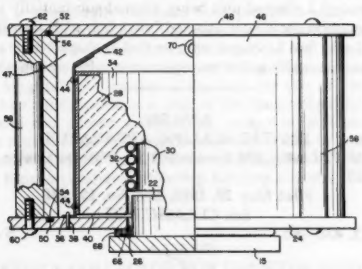
VACUUM FIRING PORCELAIN FURNACE

Roger W. Earle, and William J. Walsh, both of Dubuque, Iowa, assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 30, 1981, Ser. No. 229,956

Int. Cl.³ F27B *5/04, 11/00*

U.S. Cl. 432—205 **11 Claims**



1. A vacuum firing porcelain furnace including a vacuum chamber and means for evacuating the chamber, said furnace comprising:

(a) a top plate, base plate and an upright side wall defining said vacuum chamber, said base plate having an opening therethrough;

(b) a muffle in said vacuum chamber, said muffle enclosing a firing chamber which communicates with said opening;

(c) locating means on said muffle and cooperating with said top and bottom plates for locating and holding said muffle in a preselected position against said base plate said locating means including

(i) an L-shaped bracket having a first leg fixed to the periphery of said muffle and a second leg extending outward from said muffle, said second leg having an opening therethrough, and

(ii) a locating pin on said base plate adapted to be received in said bracket opening for locating said muffle at a preselected position within said vacuum chamber;

(d) seal means carried by said base plate about the lower periphery of said opening, and

(e) a door supported by said furnace for movement upward against said seal means to close said opening.

4,332,554

SHAFT FURNACE HAVING COOLING PLATES

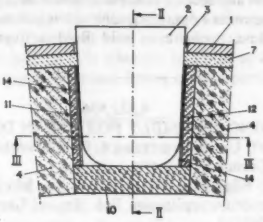
Jacobus van Laar, Santpoort; Jacob Felthuis, Oudorp, and Wilhelmus A. J. Kastelic, Ijmuiden, all of Netherlands, assignors to Hoogovens Ijmuiden B.V., Ijmuiden, Netherlands

Filed Jun. 20, 1980, Ser. No. 161,655

Claims priority, application Netherlands, Jun. 21, 1979, 7904848; Nov. 13, 1979, 790820

Int. Cl.³ F27D *1/12*; C21B *7/10*

U.S. Cl. 432—233 **13 Claims**



13. In a shaft furnace having a furnace armour

a refractory inner lining inside the armour and a plurality of cooling plates inserted through the armour into recesses in the lining, with the main faces of each plate facing respectively upwardly and downwardly, opposite side edges and a front edge which faces toward the interior of the furnace,

the improvement that

each recess is at least partly bounded by a plurality of shaped refractory members which serve to maintain the shape of the recess, said members comprising at each of the two sides of the recess, an elongate member which is disposed with its longitudinal direction substantially radial with respect to the furnace and has a surface of generally complementary shape with respect to an adjacent side edge of said cooling plate and, as the roof of the recess, a cover member which is supported on the said elongate members and has a surface of generally complementary shape with respect to an adjacent surface of said upwardly facing main face of said cooling plate.

4,332,555

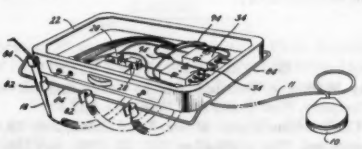
DENTAL DRILL CONTROL MECHANISM

Howard M. Richardson, Philadelphia, Pa., assignor to Dentrex Manufacturing Company, Philadelphia, Pa.

Filed Jan. 2, 1981, Ser. No. 221,961

Int. Cl.³ A61C *1/02*

U.S. Cl. 433—28 **16 Claims**



1. A dental drill control mechanism comprising:

a source of first fluid;

a source of second fluid;

means for conveying said first and second fluids from said

respective first and second fluid sources to said dental drill;

fluid activated means associated with said conveying means for controlling the passage of said first and second fluids to said dental drill;

means for supplying said first fluid at a reduced pressure directly to said fluid activated controlling means, said fluid presence operating said fluid activated controlling means to close off said first and second fluids to said dental drill; and

means for holding said dental drill, including valving means connected to said first fluid reduced pressure supply means for selectively releasing said first fluid supplied from said reduced pressure supply means and from said fluid activated controlling means, said releasing thereby opening said fluid activated controlling means passage of said first and second fluids said dental drill presence in said holding means operating said valving means to cause said first fluid pressure at said fluid activated controlling means.

4,332,556

ALIGNING ASSEMBLY FOR USE IN DENTISTRY

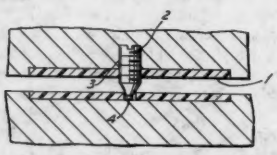
Karl Daiberl, Untersbergstrasse 4, 8000 München 90, DE, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,190

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 7709769[U]

Int. Cl.³ A61C *19/04*

U.S. Cl. 433—69 **2 Claims**



1. A method of determining correct mandibular position, particularly in prosthodontic and orthodontic work, comprising the steps of providing two prefabricated flat, rigid plates of a standard shape exceeding the inner contour of the parient's gums, and made of plastic material, one of said plates having a projection thereon; marking said plates according to the inner contour of existent teeth; adjusting the edges of the plates by cutting off the portions thereof exceeding the marked contours; positioning the adjusted plates in the oral cavity to rest on the upper gum and the lower gum, respectively, whereby the projection abuts the other plate; having the patient move his jaws from opposite directions until the projection provides a centering mark on the other plate; removing at least the other plate from the oral cavity; forming a recess in the place of the centering mark; repositioning the other plate in the oral cavity; having the patient move his jaws until the projection partially enters the recess; and connecting the plates to each other to form a compact aligning assembly prior to the removal thereof from the oral cavity.

4,332,557

DENTAL OPERATORY SYSTEM

Tony Watanabe, Redondo Beach, Calif., assignor to Takara Company, New York, Inc., Somerset, N.J.

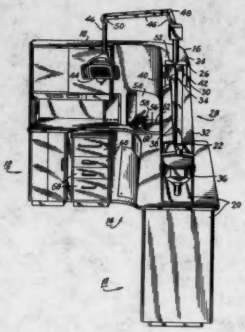
Continuation-in-part of Ser. No. 122,565, Feb. 19, 1980, abandoned. This application Oct. 22, 1980, Ser. No. 199,516

Int. Cl.³ A61C *1/14*

U.S. Cl. 433—77 **18 Claims**

1. A dental operatory system comprising:

a generally L-shaped first dental operatory unit, wherein the inside of the L defines an operatory work space for a first dental operator, and wherein the outside of one leg of the L provides an operatory work space for a second dental operator, said L leg outside comprising dental operatory implements for dental operations, and means to mount said implements for accessing into said second operatory work space for use by said second dental operator, said unit further comprising dental operatory means said dental operatory means comprising an X-ray unit, and means to mount said X-ray unit on said one leg of the L-shaped unit, and means to permit alternative use of said X-ray unit by said operators in the respective operatory work spaces, and further comprising an X-ray operatory control unit,



and means to mount said X-ray operatory control unit on the outside of the other leg of the L-shaped unit for use by the operators, and whereby a generally L-shaped second dental operatory unit, is spacedly positionable from and in registration with and performing the dental operatory functions as in said first unit with said one leg of said second L-shaped unit being substantially parallel to one leg of said first L-shaped unit, and the other leg of said second L-shaped unit being aligned substantially along a common rectilinear axis and in tandem with the other leg of said first L-shaped unit, so that L-shaped units may be incrementally added in registration with one another.

4,332,558

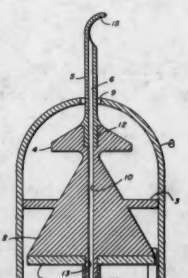
DENTAL SCALING APPARATUS

Leopold P. Lustig, 304 Greenwood St., Newton Centre, Mass. 02159

Filed May 20, 1980, Ser. No. 151,630

Int. Cl.³ A61C *1/07*

U.S. Cl. 433—86 **5 Claims**



1. Apparatus for scaling teeth comprising an elongated hollow tubular scaling tool having a working end formed for contacting the surface of a tooth to be cleaned of calculus, and a canal extending through the other end, means to introduce a

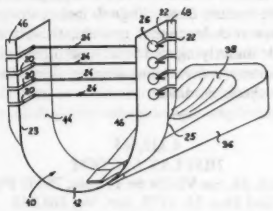
liquid via said other end of the tool for delivery to the working end, and drive means consisting essentially of an electromechanical oscillator and a mechanical coupling component which vibrates in a longitudinal mode fixed together at a first end of said coupling component, a bending-mode vibrator fixed and supported in an intermediate region of its vibrational mode to the second end of said coupling component, said tool being coupled at said other end to said bending-mode vibrator in a peripheral second region thereof which is remote from said intermediate region, so as to impose elastic wave oscillations on said tool for vibrating the working end at a frequency above the audible frequency range.

4,332,559

DENTAL FLOSS APPLICATOR AND METHOD OF ANCHORING DENTAL FLOSS UNITS AT A FRAME

Josef Dolinsky, Salzstrasse 4, D - 8960 Kempten, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,597
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—91 **5 Claims**



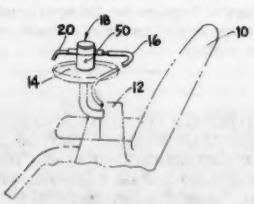
1. A dental floss applicator comprising a substantially U-shaped frame of resilient material having a pair of substantially parallel arms, each one of said arms provided with a slit for holding a unit length of dental floss provided with caps or beads at both ends of which, characterized in that a plurality of slits are provided in each one of the arms, the slits of each arm extend parallely with one another and angularly with respect to the longitudinal direction of the arm, the slits of each arm have their inlet openings at one of the longitudinal edges of each arm and extend substantially cross-wise and end at a middle region of the arm and the plurality of slits of both arms are spaced equally in order to hold a plurality of unit lengths of dental floss in parallel relationship forming a dental floss curtain.

4,332,560

PARTICLE COLLECTOR FOR USE WITH DENTAL SUCTION APPARATUS

Joseph M. Rait, 1100 Amherst St., Buffalo, N.Y. 14216

Filed Mar. 10, 1980, Ser. No. 128,631
Int. Cl.³ A61C *17/04*
U.S. Cl. 433—92 **3 Claims**



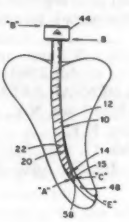
1. In a dental suction apparatus for cleaning debris and saliva from the mouth of a patient during a dental procedure which includes a vacuum source, a readily removable and replaceable pick up tube for insertion in a patient's mouth and a flexible conduit for connecting said pick up tube to said vacuum source, a fitting on said flexible conduit for retaining said pick up tube, a portable particle collector for separating and recovering waste particles of precious metals in a relatively clean condition adapted to be removably connected to the suction apparatus intermediate said pick up tube and said conduit comprising a reservoir and a removable closure cap for said reservoir; said closure cap having an inlet port and an outlet port, a first duct disposed in angular relationship to said inlet port and a second duct disposed in angular relationship to said outlet port, said first and second ducts being disposed to effect fluid communication between said reservoir and said inlet and outlet ports, respectively, a radially outward protruding nipple at said outlet port and a radially outwardly protruding nipple at said inlet port, said fitting having an outer surface engageable with said outlet port and an internal surface engageable with said pick up tube, said inlet port being also frictionally engageable with pick up tube whereby said pick up tube can be alternatively engaged with said fitting or said particle collector.

4,332,561

DENTAL FILE

John T. McSpadden, Johnson City, Tenn., assignor to Inventive Technology International, Inc., Johnson City, Tenn.

Continuation-in-part of Ser. No. 63,436, Aug. 3, 1979, Pat. No. 4,299,571. This application May 14, 1981, Ser. No. 263,406
Int. Cl.³ A61C *5/02*
U.S. Cl. 433—102 **4 Claims**



1. A set of dental files comprising individual files each having a shank tapered along at least part of its length, having cutting means formed in at least a portion of the tapered length of the shank, the files of the set having tapered shanks which incrementally increase in diameter from one file to the next larger file of the set, and each file of the set comprises a generally cylindrical smooth walled pilot having a generally non-cutting end formed at and projecting coaxially from the tapered end of the shank, the diameter of said pilot being substantially the same for all files of the set and corresponds to a pilot dimensioned for the smallest file of the set said pilot having a length from greater than about 1.0 mm to about 3.0 mm.

4,332,562

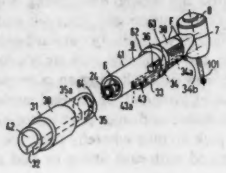
DENTAL HANDPIECE

Werner Schuss, Heppenheim, and Ernst-Otto Fleer, Bensheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 30, 1980, Ser. No. 202,137
Claims priority, application European Pat. Off., Nov. 29, 1979, 79104765
Int. Cl.³ A61C *1/08*
U.S. Cl. 433—126 **11 Claims**

1. A dental handpiece comprising at least a first handpiece part; a second handpiece part, each of said handpiece parts having a drive shaft with a gear at each end and a cooling line segment for at least one cooling agent; and connecting means

for releasably interconnecting the handpiece parts together with the gears of the drive shafts in driving engagement, said connecting means including means for preventing relative twisting between the handpiece parts and at least one catch element being provided on the first handpiece part coacting with a counter element arranged on the second handpiece part, said catch element and counter element being disengageable to enable disassembly of the connecting means, said means for preventing including a guide member arranged on one of said first and second handpiece parts and extending axially therefrom to be engaged in an axially extending guide slot in the



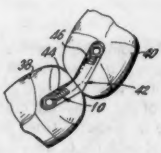
other of said first and second handpiece parts, said guide member supporting the cooling line segment of the one handpiece part with each segment opening on a surface of said guide member, the other handpiece part having a portion supporting each of its cooling line segments with the segments projecting from a surface of the portion into the guide slot and into said openings to form an axial connection with the segments of the guide member, and said connecting means including means for sealing the axial connection of the segments so that during connection of the two parts together, a sealed axial connection of the segments of the parts is formed.

4,332,563

FLEXIBLE DENTAL RETAINING SPLINT

Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Filed Feb. 17, 1981, Ser. No. 234,857
Int. Cl.³ A61C *5/00*
U.S. Cl. 433—215 **15 Claims**



1. A flexible dental retaining splint disposable in a channel extending between adjacent teeth, said splint comprising body means for permitting said splint to be bent along its longitudinal length into a selected configuration, said body means including a wire core and a wire coil wound about said core, and wire loops being provided at opposite ends of said wire core, each of said wire loops defining a passageway through said splint, the passageways of said loops facing in the same direction, whereby said loops function to secure said splint in the channel when securing means pass through said passageways.

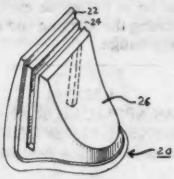
4,332,564

PREFABRICATED MODULAR CROWN SYSTEM

Raymond E. Lord, 418 Church St., North Adams, Mass. 01247

Filed Jan. 28, 1980, Ser. No. 116,091
Int. Cl.³ A61C *5/08*
U.S. Cl. 433—218 **5 Claims**

1. A prefabricated full crown system comprising two separate modules joined to form a unitary crown adapted to be mounted on and surround a prepared tooth stump to be capped, one of said modules is a functional module of metal and covers the mesial, distal, lingual, incisal or occlusal surfaces of the fully constructed unitary crown, the other of said modules is an esthetic module full cap having at least outer surfaces of plastic and covering all of the exposed surfaces of said prepared tooth stump when mounted thereon, said es-



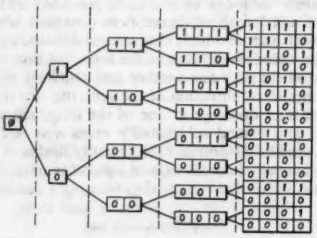
thetic module is fitted to said prepared tooth stump independently of said functional module and has prepared areas on at least one of the mesial, distal, lingual, incisal or occlusal surfaces to receive said functional module, the portion of said esthetic module underlying said functional module in said fully constructed unitary crown being thinner than the other surfaces of said esthetic module.

4,332,565

DISPLAY SYSTEM

Pierre F. Mialet, 56, rue Vieille du Temple, 75003 Paris, France

Filed Dec. 31, 1979, Ser. No. 108,962
Claims priority, application France, Jan. 3, 1979, 79 00070
Int. Cl.³ G09B *1/06, 1/16, 5/00, 23/02*
U.S. Cl. 434—118 **7 Claims**



1. Display device for the display of at least one indicia comprising a display surface provided with 99 display spaces distributed into five columns, the first column comprising one space, the second column comprising two spaces, located one above the other, the third column comprising 4 groups of two spaces, located above one another, the fourth column comprising 8 groups of 3 spaces located above one another, the fifth column comprising 16 groups of 4 spaces, said groups located one above another.

4,332,566

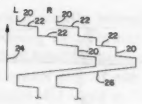
MONITORING ATTENTION AND COGNITION AND THE EFFECT OF SENSORY MOTOR, NUTRITIONAL, AND OTHER BIOCHEMICAL FACTORS THEREON

Conrad A. Mazeski, and Ken Candelaria, both of 201 W. Prospect Ave., Mount Prospect, Ill. 60056

Filed Sep. 4, 1979, Ser. No. 72,328
Int. Cl.³ G09B *5/00;* A61B *5/04*
U.S. Cl. 434—178 **15 Claims**

1. A method of analyzing and modifying the behavioral response of a test subject displaying learning disability and of

administering therapy for said disability, said method including the steps of monitoring the characteristic aplha brain wave pattern displayed by said subject during an attempt by said subject to attend to and understand written material, analyzing said pattern to determine the frequency of occurrence and duration of high amplitude alpha brain waves occurring in the subject, said high amplitude waves being those which are high in relation to the amplitude of alpha brain waves of a test



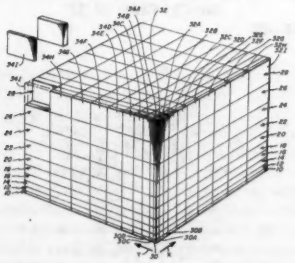
subject displaying good attention characteristics and not characterized by a learning disability, said method further including the step of administering at least one therapeutic method selected from the group of therapeutic methods which includes print size variation reading therapy, sensory motor therapy and nutritional therapy in order to reduce said frequency of occurrence and said duration of said high amplitude alpha brain waves.

4,332,567

MATHEMATICAL TEACHING APPARATUS

Pastora S. Nogues, c/o A. J. Zeoli, 270 Huntington Ave., Boston, Mass. 02115

Filed May 8, 1980, Ser. No. 148,177
Int. Cl.³ G09B *19/02*
U.S. Cl. 434—195 **3 Claims**



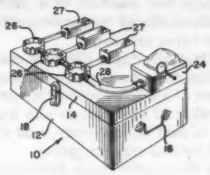
1. Mathematical teaching apparatus formed of a plurality of blocks arranged in a plurality of planar arrays, one overlying the other, and each of different predetermined height with a base array of unity height and each overlying array progressing by a unity increase in height from the base array, said base array formed of blocks in x and y rows commencing from a corner cube block of unity dimension with the x and y block rows progressing in length by an integer from the corner cube block, wherein in the x direction, blocks of the base array are arranged commencing from the corner unity block with integer increases in length 2, 3, 4, etc., in the y direction of the base array are arranged commencing from the corner unity block with integer increases in length 2, 3, 4 etc., and in the z direction of the blocks commencing from the corner unity block increases in integer length 2, 3, 4 etc.

4,332,568

CABINET WITH ELECTRICAL APPARATUS FOR USE IN TEACHING

Darryl E. Hyink, 10256 W. 151st St., Orland Park, Ill. 60462

Filed Oct. 19, 1977, Ser. No. 843,549
Int. Cl.³ G09B *23/18*
U.S. Cl. 434—224 **2 Claims**



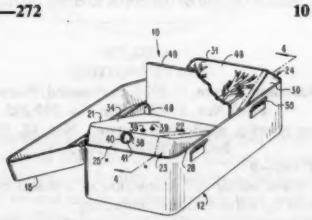
1. A portable, hand held teaching laboratory comprising:
a self-contained teaching and demonstrating device for use in schools with house wiring apparatus permanently affixed to a cabinet and having wiring devices in compartments;
said cabinet having a top cover and a lower unit;
said lower unit providing a receptacle with a plurality of various size compartments for carrying electrical items;
electrical apparatus comprising a plurality of electrical connector box means and a plurality of receptacle box means associated with each connector box means;
electrical conduit interconnecting the connector box means and the receptacle box means;
means permanently mounting the electrical apparatus to the outside of said top cover;
said compartments comprising a first elongated rectangular compartment extending the length of said lower unit for carrying and displaying electrical apparatus;
said compartments also including a plurality of second rectangular compartments positioned at right angles to the first rectangular compartment;
said cabinet having handle means for grasping and carrying the cabinet between locations;
hinge means interconnecting the top cover and the lower unit and including latch means for positioning the top cover and the attached electrical apparatus at an angle above a supporting surface;
said cabinet comprising wood means;
electrical items carried with said compartments; and
said electrical items including switch means and electrical outlet means.

4,332,569

INSTRUCTIONAL DEVICE FOR USE OF A BRONCHOSCOPE

Peter L. Burbank, Lexington, Ky., assignor to University of Kentucky Research Foundation, Lexington, Ky.

Filed Mar. 16, 1981, Ser. No. 244,203
Int. Cl.³ G09B *23/30*
U.S. Cl. 434—272 **10 Claims**



1. An instructional device for instructing a person in the use

of a bronchoscope in a tracheobronchial tree of a patient including:

a hollow body having the shape of a tracheobronchial tree including a plurality of segments;

support means to support said hollow body so that said tracheobronchial tree segments of said hollow body are hidden from view;

said hollow body having an entrance opening to receive a bronchoscope for insertion of a probe of the bronchoscope into one of said tracheobronchial tree segments by the person being instructed;

said hollow body having a plurality of openings located at various of said tracheobronchial tree segments;

display means of a tracheobronchial tree having at least the same plurality of segments as said tracheobronchial tree segments of said hollow body, said display means being supported by said support means;

and separate fiber optic means extending from each of said openings in said hollow body to transmit light from a probe of a bronchoscope in said hollow body to the same corresponding location of the tracheobronchial tree of said display means to indicate on the tracheobronchial tree of said display means the location of the probe of the bronchoscope in said hollow body.

4,332,570

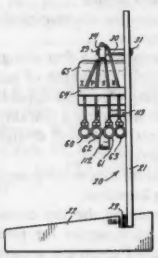
ANATOMICAL MODEL

Paul A. Getty, 2113 Glenwood Ave., Saginaw, Mich. 48601

Filed Sep. 8, 1976, Ser. No. 721,456

Int. Cl.³ G09B *23/32*

U.S. Cl. 434—274 **29 Claims**



1. An anatomical finger model comprising a base and simulated finger bones mounted thereon, including a proximal phalanx for pivoting about a horizontal axis when the model is upright, means pivotally supporting it at its proximal end onto the base, a middle phalanx with means pivotally connecting its proximal end to the distal end of the proximal phalanx; a first cord extending across the upper part of the middle phalanx, so that tension on the cord can pivot the middle phalanx about the proximal phalanx into extended positions; a second cord supported to be disposed at the lower part of the proximal phalanx, and then to extend alongside it toward the upper part thereof, and connections between the two cords having means causing tension on one of the cords to draw on the other cord.

4,332,571

WAVE MOTORS

Einar Jakobsen, Roven, N-1920, Sorumsand, Norway

Filed Nov. 9, 1978, Ser. No. 959,293

Claims priority, application Norway, Nov. 11, 1977, 773849

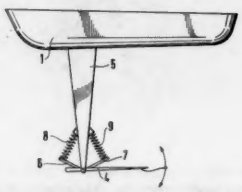
Int. Cl.³ B63H *1/30, 5/00*

U.S. Cl. 440—9 **7 Claims**

1. A wave motor for propulsion of a water-bourne vessel influenced by wave action, comprising:

a. a support structure rigidly connected to the vessel and extending downwards therefrom to have a lower end thereof located at a distance beneath the hull of the vessel at a level at which the water is relatively calm in relation to water movements at the water surface because of wave action;

b. propulsion means comprising an essentially horizontally disposed, platelike tilting element which, at a forward portion thereof as viewed in the cruising direction, is rotatably connected about a horizontal axis to said lower end of said supporting structure, and is adapted to effect a tilting movement as a result of relative movement between said element and the surrounding water when said vessel



is rising and lowering due to wave action at the water surface; and

c. means causing said tilting element to be held in a substantially horizontal neutral position when no relative movement exists between the element and the surrounding water, said means comprising a force-exerting device connected between said supporting structure and said tilting element and exerting opposed, resilient returning forces on said tilting element upon angular displacement thereof, to bring it back to said neutral position.

4,332,572

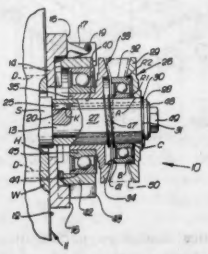
REMOTELY MANUALLY CONTROLLABLE BELT DRIVE CLUTCH

Paul R. Carlson, and Richard L. Carlson, both of P.O. Box 290, San Bernardino, Calif. 92402

Continuation-in-part of Ser. No. 935,599, Aug. 21, 1978, abandoned. This application Jun. 19, 1980, Ser. No. 160,968

Int. Cl.³ F16H *55/52*

U.S. Cl. 474—38 **6 Claims**



1. In a belt drive clutch adapted to be mounted in a spline driven relation on a power output shaft of a small internal combustion engine, the combination of:

a sleeve slidably fitting over said power output shaft in a spline driven relation therewith, said sleeve having a hexagonal conformation externally;

an inwardly bevelled outer sheave disc fixed on the outer extremity of said sleeve;

means associated with said power output shaft to confine said sleeve in coextensively covering relation with said power output shaft;

a drive belt supporting annulus provided to be freely rotat-

able on said sleeve and to occupy a position thereon just inwardly from said outer sheave disc;

an oppositely bevelled inner sheave disc having a short hollow stub shaft extending inwardly from said inner sheave disc and integral therewith and having a hexagonal bore slidably fitting and spline matching the hexagonal external conformation on said sleeve;

a ball bearing means having substantially co-planar central and peripheral races and permanently assembled on said stub shaft by pressing the central race of said bearing means thereon;

a clutch control ring permanently assembled on said ball bearing means by pressing said control ring on said peripheral race of said ball bearing means; and

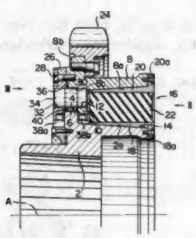
means for shifting said control ring axially, while an endless drive belt is trained about said annulus, to engage or disengage said belt by optionally constricting or expanding the space between said outer and inner sheave discs.

4,332,573

SPROCKET WHEELS OF AN ENDLESS TRACK-TYPE VEHICLE

Kanich Uchida, Tokyo, and Hitoshi Sawamura, Hirakata, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 18, 1980, Ser. No. 141,361
Claims priority, application Japan, Apr. 23, 1979, 54-49063
Int. Cl.³ B62D *55/12*
U.S. Cl. 474—94 **3 Claims**



1. A sprocket wheel of an endless track-type vehicle including a substantially annular-shaped inner part of a hub fixedly mounted on a sprocket wheel driving shaft, a substantially annular-shaped outer part of the hub arranged at the radially outside of said inner part so as to form an annular space therebetween, an outer peripheral surface of the inner part and an inner peripheral surface of the outer part being, respectively, formed of oppositely tapered surfaces, thereby defining said annular space as an annular conical-trapezoidal space, a plurality of deformable resilient block segments equispacedly and fixedly inserted into said annular space, and stopper means for preventing said deformable resilient block segments from their respective excessive deformation, the improvement wherein each of said deformable resilient block segments comprises:

(a) a radially inner member having at one end thereof a flange portion extending radially inwardly and fixedly secured through said flange portion to one end face of said inner part by means of bolts, the inner peripheral surface being formed in a tapered surface so as to adapt to that of said inner part;

(b) a radially outer member having at one end thereof a flange portion extending radially outwardly and fixedly secured through said flange portion to one end face of said outer part by means of bolts, the outer peripheral surface being formed in a tapered surface so as to adapt to that of said outer part; and

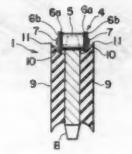
(c) a resilient member allowing the inner and outer peripheral surfaces thereof to fix in seizure to the radially outer surface of said inner member and the radially inner surface of said outer member, respectively.

4,332,574

MOTORCYCLE SPROCKET

Takahiko Aoyama, and Akira Nakaya, both of Akashi, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Jan. 21, 1980, Ser. No. 113,889
Claims priority, application Japan, Jan. 29, 1979, 54-10204
Int. Cl.³ F16H *55/30*
U.S. Cl. 474—161 **8 Claims**



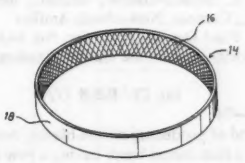
1. A sprocket for a motorcycle comprising: a metal sprocket body; and a pair of vibration preventing members made of an elastic material, each vibration preventing member having a bonding surface whose diameter is substantially equal to the effective diameter of said metal sprocket body, said pair of vibration preventing members being secured one on each side of said sprocket body through said bonding surfaces, each vibration preventing member being so shaped that the diameter thereof increases gradually toward the outside thereof in such a manner that when a load is applied to a chain running around said sprocket outside portions of said chain running over said sprocket are in contact with circumferential surfaces of said vibration preventing members for a plurality of load values so as to reduce wavelike vibrations in said chain and reduce noise.

4,332,575

COMPOSITE DRIVING BELT

Emery F. M. Hendriks, Heeze, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Jan. 29, 1980, Ser. No. 116,656
Claims priority, application Netherlands, Jan. 30, 1979, 7900707
Int. Cl.³ F16G *1/26*
U.S. Cl. 474—201 **6 Claims**

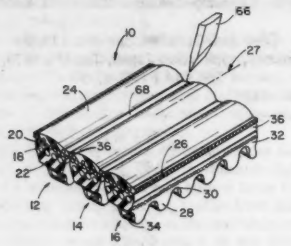


1. An endless flexible carrier for a driving belt of the kind having a plurality of plate-like elements slidably mounted on the carrier comprising a plurality of endless metal bands disposed radially around and in sliding contact with each other such that in use there is a mutual speed different between bands, at least one of said bands, at least at one side, being provided with a surface profiling which decreases friction between the bands.

4,332,576
V-BELT

Alfred L. Stecklein, and Jerome M. Daugherty, both of Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Jan. 11, 1980, Ser. No. 111,419
Int. Cl.³ F16G 5/00; B29H 7/22
U.S. Cl. 474—205 **12 Claims**



1. A molded notch elastomeric endless power transmission belt comprising:

a generally V-shaped trapezoidal body including a load carrying section sandwiched between a tension and a compression section, said body having driving sidewalls which are cut edged and mold formed;

molded notches formed in the compression section of the belt defining alternating notch depression surfaces and toothed projections;

at least one ply of a fabric material following the outer contour of the notches and integral therewith, said fabric extending transversely across substantially the full lateral extent of the toothed projections while extending laterally across only an intermediate, partial portion of the notch depression surfaces;

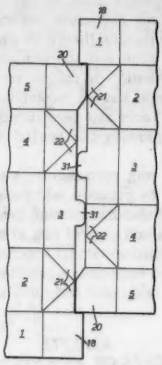
said at least one ply of fabric material being uniformly applied along the full outer contour of the notch depression surfaces and toothed projections, and serving as the sole fabric reinforcement along such full contour of the notch depression surfaces and toothed projections.

4,332,577
PACKAGING

Richard W. E. Mosse, London, England, assignor to Novus Corp. N.V., Curacao, Netherlands Antilles

Filed Oct. 15, 1979, Ser. No. 84,656
Claims priority, application United Kingdom, Oct. 13, 1978, 40547/78
Int. Cl.³ B31B 1/16
U.S. Cl. 493—74 **6 Claims**

1. A method of producing carton blanks, comprising cutting from a sheet a first carton blank having a row of five panels of which alternate panels include respective projections at an edge of the first blank extending along said row, and cutting from said sheet a second carton blank having a parallel row of five panels of which the panels are offset along the row of said second blank relative to corresponding panels of the row of said first blank and of which alternate panels have at an edge of the second blank extending along the row of said second blank respective projections in an arrangement substantially identical to that of the first-mentioned projections and interdigitating with those projections, the projection of one of the panels of the first blank having a dimension along said row of said first blank significantly smaller than that of said one of the panels, and one of said projections of the second blank being at least

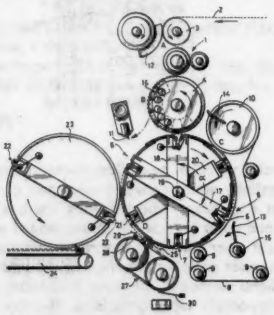


partly co-extensive along the rows with said one of the panels of the first blank.

4,332,578
APPARATUS FOR MAKING THERMOPLASTIC CARRIER BAGS

Leonard van der Meulen, Immeuble Saadi, Appt. 22A, Ariana, Tunisia

Filed Aug. 18, 1980, Ser. No. 179,170
Claims priority, application Netherlands, Aug. 21, 1979, 7906324
Int. Cl.³ B31B 1/16, 1/64, 1/86
U.S. Cl. 493—197 **5 Claims**



1. Apparatus for making carrier bags of thermoplastic material starting from a continuous tubular strip of thermoplastic film, either side of which contains a gusset fold, said apparatus comprising a set of supply rollers, said supply rollers driven at a constant speed for advancing said strip to a cylindrical drum and a co-operating supporting belt, said drum being provided with heatsealing means mounted in the periphery of the drum housing and means for rotating said drum with a circumferential velocity exceeding the feeding speed of the supply rollers, said apparatus further comprising:

a. cutting means co-operating with the supply rollers for sequentially providing the tubular strip of thermoplastic film with a U-shape cut at spaced locations corresponding to the length of the carrier bags desired;

b. severing means for cutting off the strip transversely at a line, somewhat beyond the legs of the U-shape cut so as to obtain cut-off strip portions;

c. heat sealing means on the periphery of said drum for

sealing the ends of said cut-off strip portions, and means for urging the ends of the cut-off strip portions into operative sealing arrangement with said heatsealing means;

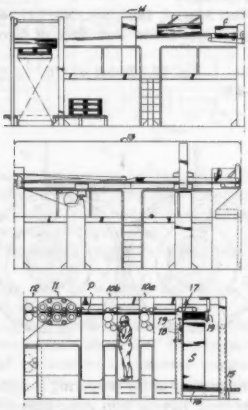
d. folding means along a describing line of the drum circumference, being positioned substantially half way of the length of the cut-off strip portion, and arranged for cooperation with folding tongs in an adjacent auxiliary drum for folding the cut-off strip portions.

4,332,579

PRODUCTION OF CASES

Frederick P. Johnson, Audenshaw, England, assignor to Simon Container Machinery Limited, Stockport, England

Filed Aug. 6, 1979, Ser. No. 63,690
Int. Cl.³ B31B *1/06*
U.S. Cl. 493—325 **3 Claims**



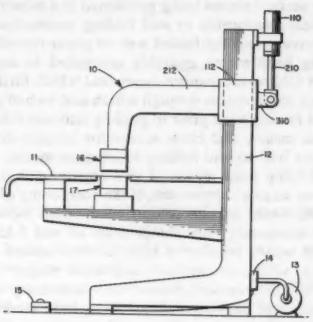
1. A method of converting box blanks into formed but collapsed cases in a system wherein tall vertical stacks of said blanks each of an appreciable height corresponding substantially to the height of a worker are successively conveyed from corrugating machinery to a line of casemaking machinery, comprising providing an elevated line of casemaking machinery, introducing at the commencement of the line one of said tall vertical stacks of box blanks arising from a support, said line having a working path extending at a level above the top of said stack, elevating the support to raise the stack continuously towards a suitable feed mechanism disposed at the level of said path which engages with the top blank of the stack, and actuating the feed mechanism to horizontally feed said blanks one at a time in timed sequence from the top of the rising stack individually and directly into the line of casemaking machinery, and wherein after the residual rising stack is depleted to a relatively short vertical dimension, said residual rising stack is separated from the support and temporarily supported and continues to be elevated by means which engage the bottom of the stack, returning the support down to its initial position and placing thereupon a further tall vertical stack of blanks of said appreciable height in the space below said short stack, elevating said support until the top blank of the further stack is at the base of said shorter stack and withdrawing said engaging means so that the short stack becomes supported by the rising further stack and both stacks are now continuously elevated as one towards the feeding mechanism, thereby to provide substantially uninterrupted supply of blanks to said casemaking machinery.

4,332,580

PIECING MACHINE FOR NON-FABRIC RIBBONS

Massimo Macchi, Parabiago, Italy, assignor to Officine Savio S.p.A., Pordenone, Italy

Filed Feb. 8, 1980, Ser. No. 119,789
Claims priority, application Italy, Feb. 21, 1979, 83339 A/79
Int. Cl.³ B31F *5/00*
U.S. Cl. 493—346 **5 Claims**



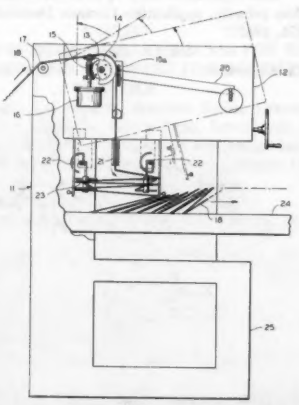
1. Piecing machine for non-fabric ribbons comprising upper and lower heads, at least one of said heads defining ports directed toward said other head for introducing jets of fluid between said heads, a source of fluid connected to said ports and a support plane for introducing said non-fabric ribbons between said heads to be acted upon by said jets, said head having ports has ribs extending between said ports.

4,332,581

ADJUSTABLE PAPER FOLDING APPARATUS

Doyle D. Thompson, Phoenix, Ariz., assignor to Form Flo Equipment Manufacturers Inc., Phoenix, Ariz.

Filed Feb. 15, 1980, Ser. No. 121,693
Int. Cl.³ B65H *45/20*
U.S. Cl. 493—413 **6 Claims**



1. A variable position spiral-type paper folding apparatus for fan-folding a variety of webbed paper products of different paper weights and lengths and thus various folding bulks, said apparatus comprising:

folding mechanism means for crimping and delivering a web of paper in a fan-folded configuration;

said folding mechanism means including crimping means for repeatedly crimping folds into said webbed paper prod-

ucts and spiral release means for advancing and releasing said folded webbed paper product within and from said folding mechanism means;

said folding mechanism means having adjustment means for crimping and delivering paper webs of varied fold lengths and widths;

delivery surface means which cooperates with the spiral release means of said folding mechanism means, said delivery surface means being positioned in a substantially horizontal relationship to said folding mechanism means for receiving said fan-folded web of paper therefrom;

folding head means operably connected to and including said folding mechanism means and which further includes input roller means through which said web of paper enters said folding head prior to guiding into said folding mechanism means, and chute means for initially directing said paper web to said folding mechanism means;

said folding head means of said apparatus being pivotable about an axis independent of the positioning of said adjustment means of said folding mechanism means, so as to simultaneously vary the position of said folding mechanism means relative to said delivery surface means infinitely within an angularly adjustable range;

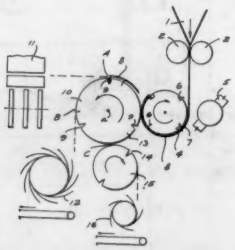
position maintenance means for maintaining the angular position of said pivotable folding head means after said variation of said position;

said adjustable range permitting the unhampered folding of said web of paper of said different weights and lengths by accommodating said varying folding bulk of same by altering the operable position of said folding head means and in turn said folding mechanism means relative to said delivery surface means so as to reduce jams, tears and other problems associated with the paper folding operation.

4,332,582
ROTARY FOLDER WITH RESETTABLE RELEASE POINT

Klaus Hertrich, Göhrenz, German Democratic Rep., assignor to VEB Polygraph Leipzig Kombinat fuer Polygraphische Maschinen und Ausruestungen, Leipzig, German Democratic Rep.

Continuation of Ser. No. 861,500, Dec. 16, 1977, abandoned.
This application May 7, 1979, Ser. No. 36,800
Claims priority, application German Democratic Rep., Dec. 23, 1976, 196577
Int. Cl.³ B65H *45/16*
U.S. Cl. 493—424 **3 Claims**



1. A folding apparatus comprising:

a fixed support;

a folding cylinder rotatable on said support about a cylinder axis;

at least one openable and closable gripper on said cylinder orbitable about said axis on rotation of said cylinder about said axis;

a cam follower on said cylinder connected to said gripper and radially displaceable to open and close same;

a plurality of cams carried on said support at said axis and each having a respective cam periphery adapted for controlling said cam follower and thus said gripper at a predetermined angular position of said cylinder;

means fixing said cams axially next to one another without freedom of relative motion in a pack;

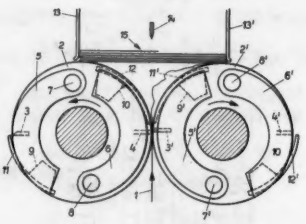
means for axially displacing said pack through a plurality of positions in each of which a respective one of said peripheries is radially aligned and engageable with said follower; and

further comprising means for displacing said follower radially away from and out of engagement with said peripheries during axial displacement of said pack.

4,332,583
FOLDING APPARATUS FOR PREPARING A ZIGZAG WEB OF PAPER

Kurt Stemmler, and Hartmut Kosche, both of Neuwied, Fed. Rep. of Germany, assignors to Winkler and Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Mar. 4, 1980, Ser. No. 127,162
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1979, 2909006
Int. Cl.³ B65H *45/16*
U.S. Cl. 493—430 **7 Claims**



1. In a folding apparatus for preparing a zigzag-folded web of paper of the type having two oppositely-rotating folding rolls, each having at least one axially-extending and radially-projecting folding stick for producing zigzag folds in the web of paper, the improvement comprising:

guide means disposed adjacent to, but spaced from, said pair of folding rolls for receiving said zigzag-folded web or paper from said folding rolls in the form of a progressively-growing stack, the base of which lies closely adjacent to said folding rolls in a plane disposed generally tangentially to the circumference of said folding rolls; and

each folding roll having a circumferential surface in which is formed at least one row of suction orifices for effecting temporary retention of the web thereagainst immediately following scoring by a folding stick of the other roll, each folding roll also having at least one pair of guard guides, one of said pair for said folding stick and the other of said pair for said row of suction orifices, each guard guide having two ends and being pivotably mounted on said associated folding roll for movement between a retracted and extended position relative to the circumferential surface thereof, said one of said guard guides associated with said folding stick, in the extended position thereof, having one end spaced radially-outwardly beyond the folding stick so as to shield and hold the base of said stack of said zigzag-folded web away from the folding stick, and said other of said guard guides associated with said row of suction orifices, in the extended position thereof, having one end spaced generally above the row of suction orifices, so as to ensure that there is a space between the same and said base of said stack of said zigzag-folded web received in said guide means.

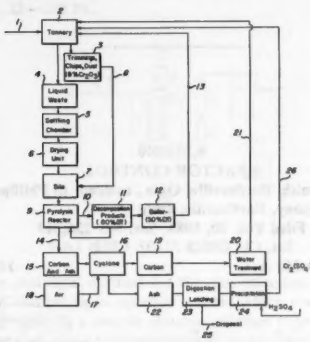
4,332,584
RECOVERY OF POTENTIAL ENERGY AND CHROMIUM VALUES FROM LEATHER TANNERY WASTES

H. S. Muralidhara, Fairfax, Va., assignor to Systems Consultants, Inc., D.C.

Continuation-in-part of Ser. No. 31,847, Apr. 20, 1979, abandoned. This application Feb. 3, 1981, Ser. No. 231,053

Int. Cl.³ C01G *37/08*

U.S. Cl. 8—94.27 **13 Claims**



13. In a process for tanning leather with a chromium-containing compound whereby chromium compound containing liquid and solid leather waste materials are produced as by-products, the improvement comprising:

(a) de-watering and substantially drying said liquid tannery waste,

(b) combining said de-watered and dried liquid tannery waste with said solid tannery waste,

(c) pyrolyzing said combined wastes in a pyrolysis zone at a temperature of from about 500° F. to about 932° F. in the absence of an amount of gaseous oxygen substantially above about 10% to produce a burnable fuel product comprising gases and liquids and a substantially solid residue containing chromium in a +3 valence state as an organic chromium complex soluble in an about 1 M sulfuric acid solution,

(d) separating said burnable fuel product from said chromium-containing residue,

(e) recovering chromium from said residue by leaching with an about 1 M sulfuric acid solution,

(f) burning a portion of said burnable fuel product to supply heat to said pyrolysis zone,

(g) burning a portion of said burnable fuel product in a boiler to produce hot water and/or steam, and

(h) recycling said recovered chromium to said tanning step.

4,332,585
SYNTHETIC FUR AND PROCESS FOR PREPARATION THEREOF

Norihiro Minemura, Takatsuki; Manabu Toyao, Ibaraki; Tsukasa Kobayashi, and Mikio Tashiro, both of Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 129,667, Mar. 12, 1980, Pat. No. 4,316,924. This application Aug. 20, 1980, Ser. No. 179,830

Claims priority, application Japan, Mar. 26, 1979, 54-34216; Aug. 20, 1979, 54-104936; Sep. 26, 1979, 54-122528; Oct. 15, 1979, 54-131782; Jan. 24, 1980, 55-6291; Jan. 28, 1980, 55-7715; Feb. 4, 1980, 55-11430

Int. Cl.³ D06M *9/04;* D06Q *1/02*

U.S. Cl. 8—114.6 **8 Claims**

1. A process for preparing a synthetic fur comprising applying a viscous treating liquid containing a solvent or hydrolyzing agent and having a viscosity of 1,000 to 15,000 C.P. to a raised surface of a fabric comprising relatively thick raised synthetic fibers, each having a transverse cross-section wherein at least one constricted part is formed, and relatively fine raised synthetic fibers, each having a rate of dissolution in the solvent or of hydrolysis with the hydrolyzing agent higher than that of said relatively thick raised synthetic fibers, to produce raised fibers different in length.

4,332,586
NOVEL REACTANTS FOR CROSSLINKING TEXTILE FABRICS

Bernard F. North, Rock Hill, S.C., assignor to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 207,247, Nov. 17, 1980, Pat. No. 4,285,690, which is a continuation-in-part of Ser. No. 92,630, Nov. 8, 1979, abandoned. This application May 15, 1981, Ser. No. 264,017

Int. Cl.³ D06M *13/34*

U.S. Cl. 8—186 **5 Claims**

1. A reactant for imparting permanent press properties to a textile containing cellulose fibers which comprises the alkylated product of the reaction of about 1.2–2.0 moles of glyoxal and about 1 mole of at least one cyclic urea.

4,332,587
COLORANT PREPARATIONS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE FOR COLORING PLASTICS

Michael Kressner, Leichlingen; Joachim Kolbe, Leverkusen; Fritz Bremer, Leverkusen; Georg Pape, Leverkusen; Karlheinz Wolf, Leverkusen, and Ferdinand Kümmeler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,049

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005908

Int. Cl.³ D06P *3/00, 3/79;* C08K *5/10;* C08J *3/20*

U.S. Cl. 8—506 **10 Claims**

1. A colorant preparation comprising:

(A) a colorant which is sparingly soluble in water in an amount of 5–70% by weight;

(B) a plasticiser based on an ester in an amount of 30–95% by weight;

(C) an ethoxylated castor oil in the amount of 0.1–10% by weight, the weights of components (A), (B) and (C) being based upon the total quantity of components (A), (B) and (C).

8. Process for the production of a preparation according to claim **1**, characterised in that a colorant which is sparingly soluble or insoluble in water, a plasticiser based on an ester, and a reaction product of a fatty acid ester of a polyhydric alcohol and ethylene oxide are mixed in wet comminution units in a manner known per se.

4,332,588

DISPERSE DYE STABLE TO DYEING, AND ITS USE FOR DYEING AND PRINTING SYNTHETIC AND SEMI-SYNTHETIC FIBRE MATERIALS

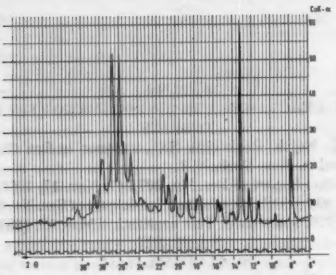
Peter Eugster, Arlesheim, and Stefan Koller, Ramlinsburg, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,597

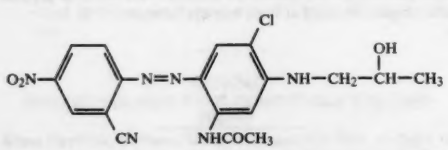
Claims priority, application Switzerland, Jan. 11, 1980, 212/80

Int. Cl.³ D06P *67/02;* C09B *27/00*

U.S. Cl. 8—526 **6 Claims**



1. A modification of the dye of the formula



which modification is stable to dyeing and is characterised by the X-ray diffraction pattern (CuK-α-radiation) with the characteristic reflexes shown in FIG. **1**, and by the d values of the interplanar spacings, calculated from the diffraction pattern: d [A]: 11.5 (s), 6.8 (vs), 4.71 (s), 4.17 (s), 3.60 (s), 3.49 (s), 3.44 (vs), 3.34 (vs) and 3.21 (s).

4,332,589

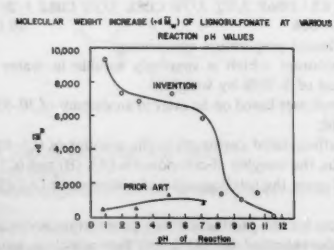
METHOD FOR POLYMERIZATION OF LIGNOSULFONATES

Stephen Y. Lin, Wausau, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Nov. 24, 1980, Ser. No. 209,478

Int. Cl.³ C09B *67/00;* C07G *1/00*

U.S. Cl. 8—557 **20 Claims**



1. A method for polymerizing lignosulfonate materials which comprises:

(1) reacting a mixture of a lignosulfonate and formaldehyde while maintaining said reaction mixture under alkaline conditions for a period sufficient to form a methylolated lignosulfonate; and

(2) effecting condensation of said methylolated lignosulfonate having a solids concentration from 10 to 55 percent under neutral or acidic conditions for a period sufficient to produce a fluid lignosulfonate of increased molecular weight.

4,332,590

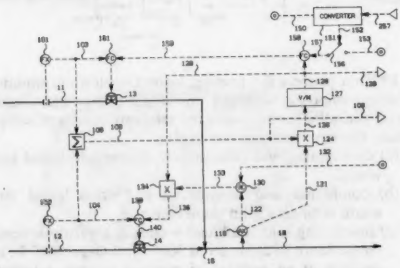
REACTOR CONTROL

Dexter E. Smith, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 20, 1981, Ser. No. 236,345

Int. Cl.³ G05D *11/02;* C07B *1/00*

U.S. Cl. 23—230 A **16 Claims**



9. A method comprising:

providing a first stream containing a first reactant material,

providing a second stream containing a second reactor material,

combining said first stream and said second stream to form a fresh feed stream,

delivering said fresh feed stream to a reactor system,

removing a product-containing stream from said reactor system,

generating a first analysis signal representative of the amount of said first reactant material in said fresh feed stream,

generating a second analysis signal representative of the amount of said first reactant material in said product-containing stream,

generating a fresh feed flow signal representative of the total combined flow of said first stream and said second stream,

generating a process conversion signal, representative of the proportion of said first reactor material converted to product within said reactor system, in response to said first analysis signal, said second analysis signal and said fresh feed flow signal

generating a first reactant flow signal, representative of the flow of said first reactor material to said reactor system, in response to said first analysis signal and said fresh feed flow signal, and

controlling the flow rate of said first stream in response to said process conversion signal, said first reactant flow signal and a production rate set point signal representative of a preselected rate at which product material is to be produced from said first and second reaction materials within said reactor system.

4,332,591

ANALYTICAL METHOD AND APPARATUS FOR THE DETERMINATION OF TOTAL NITROGEN CONTENTS IN AQUEOUS SYSTEMS

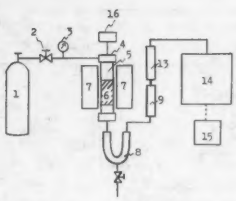
Naobumi Oi, Kyoto; Tadamasa Itoh, and Yoshiaki Yasumasa, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 29, 1978, Ser. No. 974,540

Claims priority, application Japan, Jan. 19, 1978, 53/5066; Jan. 31, 1978, 53/10243

Int. Cl.³ G01N *31/12*

U.S. Cl. 23—230 PC **4 Claims**



1. An analytical method for the determination of the total nitrogen content in an aqueous system, which comprises:

(1) introducing a sample aqueous solution together with an inert gas, containing substantially no nitrogen, and carbon monoxide as a carrier gas through a reaction tube, which is packed with a decomposition catalyst, and which is maintained at a temperature of 700° to 1200° C.;

(2) passing the resulting gaseous mixture through a condenser, thereby condensing and removing water contained in the gaseous mixture;

(3) passing the gaseous mixture through a moisture-absorbing tube;

(4) passing the resulting gas through a low temperature reaction tube, which is packed with an oxidizing agent or a reducing agent or both and which is maintained at a temperature of 300° to 700° C.;

(5) passing the obtained gas mixture through a carbon dioxide-absorbing tube;

(6) sending the gas mixture coming out of the carbon dioxide-absorbing tube to a mass spectrometer; and

(7) measuring the nitrogen content of the gas mixture with the mass spectrometer.

4,332,592

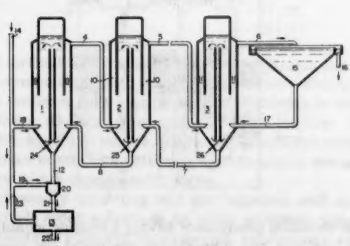
PROCESS FOR CONTINUOUS CRYSTALLIZATION

Tore B. Müller, Blomsterveien 30, Raelingen, 2000 Lillestrøm, Norway

Division of Ser. No. 852,514, Nov. 17, 1977, abandoned. This application May 8, 1979, Ser. No. 37,321

Int. Cl.³ B01D *9/02*

U.S. Cl. 23—301 **7 Claims**



1. A process for the continuous crystallization of at least one crystallizable material from a solution using a series of crystallization tanks, the process including the steps of

(a) feeding a feed solution containing at least one crystallizable material to a first crystallization tank in the series;

(b) initiating a partial crystallization of said feed solution in said first crystallization tank to form a suspension;

(c) classifying the suspension in said first tank to obtain a suspension fraction containing finer crystals and a suspension fraction containing a mixture of both finer and coarser crystals;

(d) passing said suspension fraction containing finer crystals to at least one additional crystallization tank in the series;

(e) initiating a further crystallization of said crystallizable material in the suspension in each of said additional crystallization tanks;

(f) classifying the suspension in each of said additional crystallization tanks to obtain a suspension fraction containing finer crystals and a suspension fraction containing a mixture of both finer and coarser crystals;

(g) recirculating the suspension fraction containing a mixture of both finer and coarser crystals from each of said additional crystallization tanks to the previous crystallization tank;

(h) passing the suspension fraction containing finer crystals from each additional crystallization tank but the last crystallization tank to a subsequent crystallization tank in the series;

(i) Passing said suspension fraction containing finer crystals from the last crystallization tank to a separator to obtain a mother liquor fraction as discharge and a recovered, concentrated fraction;

(j) returning said recovered, concentrated fraction to the last tank in the series;

(k) passing descending coarse crystals isolated by settling out from said suspension fraction containing a mixture of both finer and coarser crystals in said first crystallization tank in countercurrent to a liquid solution arriving from a separator system wherein coarse crystals are separated from a suspension to form product crystals leaving a residual solution which is mixed with at least a portion of the feed solution containing at least one crystallizable material to form said liquid solution and for recirculation to the separator system.

4,332,593

PROCESS FOR BENEFICIATING COAL

Lester E. Burgess, Springfield; Karl M. Fox, Swarthmore; Phillip E. McGarry, Palmerton, and David E. Herman, Jim Thorpe, all of Pa., assignors to Gulf & Western Industries, Inc., New York, N.Y.

Filed Jan. 22, 1980, Ser. No. 114,357

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **11 Claims**

1. In a process for beneficiation of coal which comprises chemically grafting a hydrophobic and oilophilic polymer surface onto pulverized coal in aqueous slurry and thereafter separating ash which remains preferentially water-wetted from the polymer surface treated coal particles by drawing off water-wetted ash phase and recovering the hydrophobic coal-oil phase: the improvement which comprises subjecting the recovered hydrophobic coal-oil phase to a high shear intermixing zone where the coal phase and a wash water phase are intermixed in a high shear zone and ejected under shearing pressures in intimate admixture of commingled droplets of coal-oil phase and wash water phase through and into impinging contacts with the surface and mass of a receiving mass of wash water, whereby ash particles priorly present in the coal-oil phase are forced into intimate contact with water; the preferentially water-wetted ash being thereby released into the water phase and removed with said water phase, the hydrophobic coal-oil mass floats upon and is separated from the water phase, physically held water is removed from the coal-

oil phase by mechanical means and a beneficiated "dry" coal-oil product recovered.

4,332,594

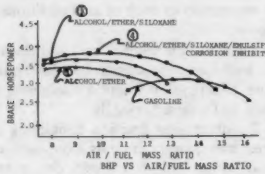
FUELS FOR INTERNAL COMBUSTION ENGINES

David M. Zimmerman, Detroit, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation-in-part of Ser. No. 114,250, Jan. 22, 1980, abandoned. This application Apr. 13, 1981, Ser. No. 253,493

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—53 **11 Claims**



1. An oxygenated hydrocarbon based fuel comprising a primary aliphatic alcohol, an ether of the formula ROR wherein R is an alkyl group containing up to about 8 carbon atoms, and a liquid silicone polymer.

4,332,595

ETHER AMINE DETERGENT AND MOTOR FUEL COMPOSITION CONTAINING SAME

Sheldon Herbstman, Spring Valley; Joseph B. Biasotti, Lagrangeville, both of N.Y., and Michael E. Brennan, Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,428

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—72 **16 Claims**

1. A compound having the following formula:

$$R—[O—CH_2—CH(CH_3)]_y—NH—(CH_2)_3—NH_2$$

where R is a hydrocarbyl radical having from 8 to 18 carbon atoms and y is about 2 to 6.

4,332,596

ENERGY EFFICIENT SCRUBBING OF SULFUR COMPOUNDS FROM MOIST GASEOUS MIXTURES

Gerhard Ranke, Pöcking, and Friedrich Siegert, Wolfratshausen, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 13, 1980, Ser. No. 159,311

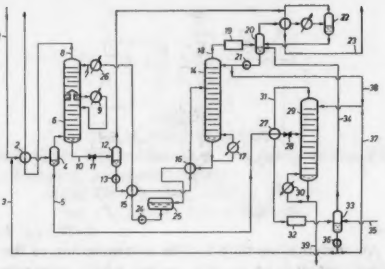
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924162

Int. Cl.³ B01D *53/14*

U.S. Cl. 55—18 **12 Claims**

1. In a process for the selective removal of a sulfur compound component comprising hydrogen sulfide from moist gaseous mixtures, the process comprising scrubbing the gaseous mixture at a temperature below 0° C., with a scrubbing liquid consisting essentially of toluene or xylene or other aromatics, prior to said scrubbing stage contacting the moist gaseous mixture with liquid methanol before the gaseous mixture is cooled to the scrubbing temperature, subjecting the scrubbing liquid containing absorbed sulfur compounds, after the scrubbing, to a thermal regeneration stage, and recycling resultant thermally regenerated scrubbing agent to the scrubbing stage, the improvement comprising: maintaining a methanol concentration of above 2% to about 30% by weight in the scrubbing liquid to be recycled from the thermal regeneration stage to the scrubbing stage.

11. In a process for the selective removal of a sulfur compound component comprising hydrogen sulfide from moist gaseous mixtures, the process comprising contacting the moist gaseous mixture with liquid methanol, subsequently scrubbing the gaseous mixture at a temperature below 0° C., with a scrubbing liquid consisting essentially of toluene, xylene or other aromatics, subjecting the scrubbing liquid containing absorbed sulfur compounds, after the scrubbing of the gaseous mixture, to a thermal regeneration stage, and recycling resultant thermally regenerated scrubbing agent to the scrubbing stage, the improvement comprising maintaining a methanol concentration of above 2% to about 30% by weight in the scrubbing



liquid to be recycled from the thermal regeneration stage to the scrubbing stage, said maintaining step comprising monitoring the methanol concentration of the regenerated scrubbing liquid withdrawn from said thermal regeneration stage, and adding make-up methanol when the concentration of methanol in the regenerated scrubbing liquid falls outside the specified concentration, whereby the thermal regeneration stage can be conducted with the sump thereof at a considerably lower temperature than with substantially pure aromatics, and with no substantial loss of selectivity of the scrubbing liquid to sulfur compounds in the scrubbing stage.

4,332,597

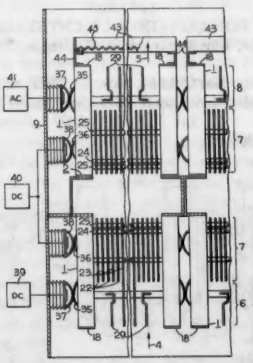
PLATE ELECTRODE ARRANGEMENT FOR AN ELECTROSTATIC PRECIPITATOR

James E. Wooldridge, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 2, 1981, Ser. No. 222,040

Int. Cl.³ B03C *3/08, 3/12*

U.S. Cl. 55—124 **7 Claims**



1. In an electrical precipitator having a housing including an upstream gas inlet and downstream gas outlet for removing particulate materials from a gas stream flowing through the housing, the improvement comprising:

mounting frame means secured across the housing between the inlet and outlet, said frame means including a pair of spaced support beams spanning the interior of the housing between the inlet and outlet to form an opening for the gas stream flowing through the housing;

first and second interchangeable essentially identical electrode plate assemblies;

each of said plate assemblies including a discharge zone and a collector zone, a plurality of spaced discharge plates disposed in the collector zone, a set of collecting plates alternately arranged with said spaced plates in the collector zone and having portions extending into the discharge zone, spaced discharge electrode members alternately disposed in the discharge zone with those portions of the collecting plates extending into the discharge zone, and means supporting the discharge plates, collecting plates and electrode members in electrically insulated relationship with one another;

said plate assemblies being supported in registry with said opening by said beams, said first plate assembly being supported on the one side of said beams and said second plate assembly being supported in an opposing fashion on the other side of said beams whereby the discharge zone of said first plate assembly is on the one side of the plate assemblies and the discharge zone of said second plate assembly is on the other side of the plate assemblies;

and

means for energizing said plate assemblies including a first DC source connected to the discharge electrode members of said first plate assembly, a second DC source connected to the discharge plates of both of said first and second plate assemblies, and an AC source connected to the discharge electrode members of said second plate assembly.

4,332,598

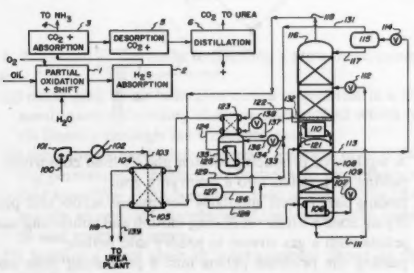
PROCESS FOR TREATING INDUSTRIAL GAS STREAM

Ioannis A. Antonas, Gillingham; Rodney J. Allam, Guildford, both of England, and William P. Hegarty, Wescosville, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 13, 1980, Ser. No. 206,731

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—17 **8 Claims**



1. A method for producing a hydrogen stream suitable for use in ammonia synthesis and a carbon dioxide stream for use in urea synthesis from a gas feedstock containing in mole percent from 45–70% hydrogen, 25–45% carbon dioxide, 0.5–1.5% hydrogen sulfide, 0.001–0.5% carbonyl sulfide and the balance comprising carbon monoxide, argon, methane and nitrogen which comprises the steps:

(a) physically scrubbing said gas feedstock with a carbon dioxide laden solvent in an initial scrubbing zone under conditions effective for removing substantially all of the hydrogen sulfide from said feedstock but insufficient for absorbing more than 70% of the carbonyl sulfide component thereby forming a first treated feedstock stream substantially free of hydrogen sulfide and an absorbent stream rich in hydrogen sulfide;

(b) physically scrubbing said first treated feedstock stream substantially free of hydrogen sulfide in a second scrubbing zone under conditions effective for removing substantially all of the carbon dioxide and carbonyl sulfide therefrom thereby forming a hydrogen stream suitable for ammonia synthesis, and an absorbent stream laden with carbon dioxide and containing the major proportion of the residual carbonyl sulfide;

(c) desorbing the absorbent stream laden with carbon dioxide under conditions for forming a gas stream of carbon dioxide, contaminated with methane, carbon monoxide, hydrogen, carbonyl sulfide and hydrogen sulfide; and

(d) fractionating the carbon dioxide stream containing hydrogen, carbon monoxide, methane, carbonyl sulfide and residual amounts of hydrogen sulfide under conditions for removing substantially all of said residual amounts of hydrogen, carbon monoxide and methane to provide a carbon dioxide stream containing carbonyl sulfide and reduced amounts of hydrogen, carbon monoxide and methane.

4,332,599

CONTINUOUS PACKED BED WASH COLUMN

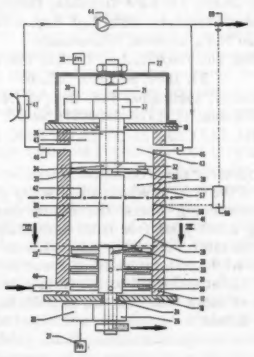
Henricus A. C. Thijssen, Son, and Bernardus G. M. van der Malen, Hagestein, both of Netherlands, assignors to Douwe Egberts Koninklijke, Tabaksfabriek-Koffiebranderijen - Theehandel B.V., Utrecht, Netherlands

Continuation-in-part of Ser. No. 866,169, Dec. 30, 1977. This application Jun. 8, 1979, Ser. No. 46,758

Claims priority, application United Kingdom, Jan. 12, 1977, 1086/77; Jun. 23, 1978, 27792/78

Int. Cl.³ B01D *9/02*

U.S. Cl. 62—542 **4 Claims**



1. A process for separating the ice crystals contained in a slurry of an aqueous solution and ice crystals from said aqueous solution comprising the steps of:

continuously introducing said slurry into a first annular space of an apparatus;

continuously withdrawing part of said solution through perforations in the surface of tilted vanes attached to a shaft coaxial with said first annular space of said apparatus to produce a packed bed of ice crystals having a homogeneous porosity throughout its cross section;

rotating said vanes to cause said packed bed to move continuously through a second annular space, said second space containing a stagnant layer of said aqueous solution in a first section and a substantially stagnant layer of wash liquid in a second section contiguous to said first section, thus creating a static washfront lying in a straight plane

perpendicular to translatory movement of said packed bed of ice crystals; and

continuously disintegrating said continuously advancing packed bed and feeding out the product of that disintegration.

4,332,600

METHOD FOR MAKING SILICA FIBERS

Arno Wegerhoff, Wörth am Main; Hans Zengel, Kleinwallstadt; Walter Brodowski, Amorbach; Heinz Beck, Düren; Ernst Seeberger, Düren; Gerhard Steenken, Düren, and Karlheinz Hillermeider, Wuppertal, all of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Filed Jan. 7, 1980, Ser. No. 110,002

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2900990; Jan. 12, 1979, 2900991; Nov. 7, 1979, 2944864

Int. Cl.³ C03C *25/06, 15/00;* **B44C** *1/22*

U.S. Cl. 65—2 **23 Claims**

1. In a process for the production of silica fibers of the type in which alkali water glass is dry spun into water-containing alkali silicate fibers which are then contacted with solutions containing hydrogen ions for transforming into silica fibers, the improvement comprising dry-spinning alkali water glass free from non-alkaline compounds, having a molar ratio of alkaline oxide to silicon dioxide of from about 1:3 to 1:1.9 and a viscosity of about 10 to 700 Pa measured at 30° C., at about 10° to 50° C. in a drying funnel of a temperature of more than 100° C. at a discharge velocity of minimum 5 m/min; and contacting the water-containing alkali silicate fibers with acid and/or salt solutions containing hydrogen ions for transforming the alkali silicate fibers into silica fibers.

4,332,601

METHOD FOR MAKING SILICA FIBERS

Arno Wegerhoff, Wörth am Main; Hans Zengel, Kleinwallstadt; Walter Brodowski, Amorbach; Heinz Beck, Düren; Ernst Seeberger, Düren; Gerhard Steenken, Düren, and Karlheinz Hillermeider, Wuppertal, all of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Division of Ser. No. 110,002, Jan. 7, 1980. This application Jun. 23, 1980, Ser. No. 162,400

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2900990; Jan. 12, 1979, 2900991; Nov. 7, 1979, 2944864

Int. Cl.³ C03C *25/06, 15/00;* **B44C** *1/22*

U.S. Cl. 65—2 **10 Claims**

1. In a process for the production of water-containing water glass fibers of the type in which alkali water glass is dry spun into water-containing fibers, the improvement comprising dry-spinning water glass free from non-alkaline compounds, having a molar ratio of alkaline oxide to silicon dioxide of from about 1:3 to 1:1.9 and a viscosity of about 10 to 700 Pa measured at 30° C., at about 10° to 50° C. in a drying funnel of a temperature of more than 100° C., at a discharge velocity of minimum 5 m/min.

4,332,602

FIN COOLER FOR GLASS FIBER FORMER

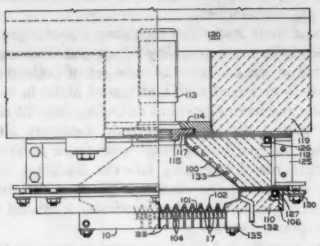
Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 2, 1980, Ser. No. 193,195

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—12 **6 Claims**

1. A fin cooler for a bushing used in a glass fiber forming assembly in which the bushing is provided with a tip plate having a plurality of glass fibers forming orifices, the orifices being arranged in a spaced array, said fin cooler being positionable below the bushing to cool the glass fibers emanating from the orifices of the bushing; said fin cooler comprising at least a first manifold, a plurality of spaced elongated cooling fins, each cooling fin having a first end secured to said manifold and extending away from said manifold, said cooling fins being parallel to each other and adjacent said glass fiber forming tips when said fin cooler is positioned adjacent the bushing; a conduit in said manifold for flowing liquid coolant through said manifold to remove heat from said fins; a coolant gas distribution chamber in said manifold, said chamber being provided with a plurality of openings along its length, said



openings being positioned so that gas fed to said chamber flows from the chamber through the orifices to the parallel fins and means on said fins for contacting the tip plate of the bushing to support said tip plate.

4,332,603

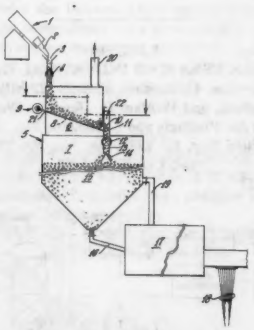
METHOD FOR PREDRYING PELLETIZED MATERIAL

Charles M. Hohman, Granville; Mark A. Propster, Gahanna, and Stephen Seng, Frazeysburg, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 15, 1980, Ser. No. 216,465

Int. Cl.³ C03B *3/00, 5/00*

U.S. Cl. 65—27 **6 Claims**



1. A method of producing molten glass which comprises:

a. passing wet pellets into a predrying zone;

b. passing said pellets angularly downward across said predrying zone with an oscillating motion and contacting said pellets with a gas stream to predry said pellets;

c. passing the predried pellets into a preheating zone and contacting said pellets with said gas stream to preheat said pellets; and,

d. melting the preheated pellets to form molten glass.

4,332,604

STRENGTH IMPROVEMENT OF GLASS BATCH PELLETS

Mark A. Propster, Gahanna, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 22, 1980, Ser. No. 219,411

Int. Cl.³ C03B *1/00*

U.S. Cl. 65—27 **9 Claims**

1. A method of processing glass batch which comprises:

(a) contacting particulate glass batch comprising uncalcined

colemanite with an aqueous solution containing an additive selected from the group consisting of sodium carbonate, boric acid and sodium hydroxide and pelletizing said batch to produce wet pellets having said additive incorporated therein in an amount effective to present the disintegration of said pellets at 1100° F. (593° C.); and,

(b) drying the wet pellets at a temperature above 770° F. (410° C.).

4,332,605

THERMALLY TREATING ARTICLES WITH PARTICULATE MATERIAL AND APPARATUS THEREFOR

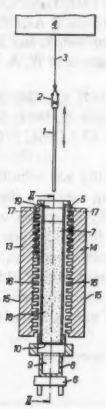
Donald C. Wright, and Gordon T. Simpkin, both of Lancashire, England, assignors to Pilkington Brothers Limited, England

Filed Oct. 20, 1980, Ser. No. 198,617

Claims priority, application United Kingdom, Oct. 23, 1979, 7936683

Int. Cl.³ C03B *27/00*

U.S. Cl. 65—114 **17 Claims**



1. A method of thermally toughening a glass sheet, comprising:

(a) employing linear induction means to generate in a treatment space a travelling electromagnetic field which travels linearly through the treatment space,

(b) subjecting a particulate material consisting of or containing permanently magnetized particles to the influence of said travelling electromagnetic field which is effective to sustain an agitated dispersion of said particulate material in said treatment space,

(c) heating a glass sheet to a temperature above its strain point,

(d) maintaining said dispersion of particulate material at a temperature such that the hot glass sheet is toughened when quenched in the dispersion, and

(e) quenching the hot glass sheet in the dispersion to toughen the sheet.

12. Apparatus for treating an article including means defining a treatment space for containing a particulate material, means for advancing the article into the treatment space, and linear induction means mounted so as to generate a travelling electromagnetic field which travels linearly through the treatment space and is of sufficient intensity to sustain in the treatment space an agitated dispersion of the particulate material which consists of or contains permanently magnetised particles.

4,332,606

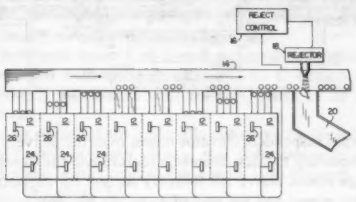
WARE IDENTIFYING APPARATUS FOR GLASSWARE MACHINES AND THE LIKE

Edward B. Gardner, Bloomfield, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Oct. 27, 1980, Ser. No. 200,939

Int. Cl.³ C03B *9/40*

U.S. Cl. 65—158 **32 Claims**



1. In a ware forming machine having multiple sections producing a plurality of articles such as glass bottles or the like from a plurality of molds during each cycle of machine operation, all of the sections depositing the articles in series on an output conveyor, a ware identifying apparatus for selectively identifying in the series on the conveyor, articles formed in a particular section and mold during a particular cycle of the machine operation comprising:

a plurality of mold switches associated respectively with each of the plurality of molds in each section, each switch being selectively actuated to provide a ware signal indicative of an article produced from the associated mold during a particular cycle of operation;

pulse generating means operatively coupled with the ware forming machine and producing trains of pulse signals corresponding to the articles formed in the machine sections during multiple cycles of the machine operation;

section signal generating means operatively coupled with the ware forming machine for generating during each cycle of machine operation a sequence of section signals corresponding to the order of the articles from the sections on the conveyor;

first gating means associated with each of the molds of the machine and connected with both the pulse generating means and the section signal generating means for detecting a coincidence of the pulse signals and the sequenced section signals and generating a series of coincidence pulses for each series of articles from the molds of the respective sections;

signal delay means connected with the plurality of mold switches to receive the ware signals from the switches and produce signals delayed for different numbers of machine cycles after the respective switches are actuated, the number of cycles of delay for the respective signals corresponding with the movement of an article from the corresponding mold in a section to a given station along the conveyor; and

second gating means connected with the first gating means and the signal dealy means to receive the series of coincidence pulses and the delayed signals to generate a unique signal identifying an article produced in a particular mold during a particular cycle of operation at a time when the article reaches the given station along the conveyor.

4,332,607

OVERHEAD MECHANISM FOR FLAT GLASS FORMING TWEEL

Stephen J. Schultz, and Ronald R. Zito, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

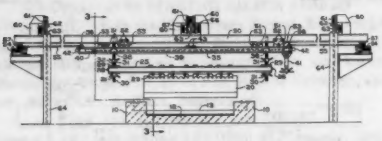
Filed Nov. 28, 1980, Ser. No. 211,166

Int. Cl.³ C03B *18/16*

U.S. Cl. 65—182.5 **6 Claims**

1. An apparatus for producing flat glass including a longitu-

dinally spaced melting furnace and forming chamber and a delivery section therebetween providing a path for a flow of molten glass in the longitudinal direction from the melting furnace into the forming chamber; tweel flow control means in the delivery section for controlling the flow of molten glass therethrough; a first support structure from which the tweel



means are suspended; elevator means over the delivery section for supporting the first support structure and the tweel means; carriage means above the delivery section for supporting the elevator means and for providing to the elevator means, first support structure, and tweel means mobility in a horizontal direction transverse to the longitudinal direction.

4,332,608

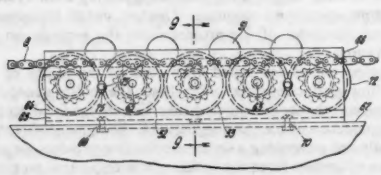
CHAIN DRIVE MECHANISM FOR EQUIPMENT FOR HEATING AND COOLING WORKPIECES

Donald E. Rhonehouse, Box 10, Rte. 1, Cecil, Ohio 45821

Continuation-in-part of Ser. No. 43,357, May 29, 1979, Pat. No. 4,297,121, and a continuation-in-part of Ser. No. 113,828, Jan. 21, 1980, Pat. No. 4,300,937. This application Jul. 25, 1980, Ser. No. 172,245

Int. Cl.³ C03B *35/18*

U.S. Cl. 65—348 **3 Claims**



1. A conveyor for a glass treating furnace comprising:

at least a pair of drive rolls on opposite sides of said furnace;

means rotatably supporting said pairs of drive rolls;

a heat resistant roller extending across said furnace;

said rolls comprising driving portions drivingly contacting said roller, and supportingly contacting said roller adjacent opposite ends of said roller with said roller being unsupported between opposing pairs of drive rolls;

said rolls including a flange extending above the point of contact between said rolls and said roller and forming a restraining shield for limiting movement of said roller longitudinally of its axis;

said rolls further comprising a driven section extending outwardly from said flange and outwardly with respect to said roller;

said driven section being of a diameter substantially less than said flange;

said driven section being shielded from the roller by said flange; and

driving means contacting said driven section and operable to drive said rolls to effect rotation of said roller.

4,332,609

FERTILIZING PLANTS WITH POLYBORATES

Louis E. Ott, Oswego, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 5, 1981, Ser. No. 240,888

Int. Cl.³ C05G *1/00*

U.S. Cl. 71—27 **13 Claims**

1. A method of fertilizing plants which comprises the application of a polyborate compound which comprises the reaction product of a boric acid compound with at least one amine selected from the group consisting of alkanolamines and aliphatic polyamines.

7. A fertilizer composition comprising: (a) a polyborate compound which comprises the reaction product of a boric acid compound with at least one amine selected from the group consisting of alkanolamines and aliphatic polyamines; and (b) another plant nutrient compound.

4,332,610

UREA FORMALDEHYDE DISPERSIONS MODIFIED WITH HIGHER ALDEHYDES

Paul Sartoretto, North Brunswick, and Kak-Yuen Tao, Highland Park, both of N.J., assignors to W. A. Cleary Chemical Corporation, Somerset, N.J.

Division of Ser. No. 143,367, Apr. 24, 1980, Pat. No. 4,298,512. This application Jun. 3, 1981, Ser. No. 269,773

Int. Cl.³ C05C *9/00*

U.S. Cl. 71—28 **3 Claims**

1. A method of fertilizing soil which comprises distributing over said soil by spraying means a dispersion of a urea aldehyde polymer prepared by a process which comprises:

(a) reacting urea with formaldehyde and a higher aldehyde having from 2 to 4 carbon atoms, wherein the mole ratio of formaldehyde to said higher aldehyde is at least 2:1, in aqueous medium in the presence of an acid catalyst to form a dispersion of urea aldehyde polymer in said aqueous medium; and

(b) neutralizing said dispersion.

4,332,611

HERBICIDAL SULFONAMIDES

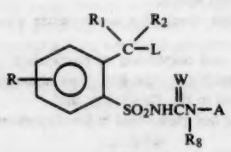
Wallace C. Petersen, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 168,352, Jul. 11, 1980, abandoned. This application May 12, 1981, Ser. No. 259,981

Int. Cl.³ A01N *43/54, 43/66*

U.S. Cl. 71—92 **25 Claims**

1. A compound selected from



(I)

wherein

L is OH, $OC(O)R_{11}$, $OC(O)NHR_{12}$ or $OC(O)OR_{13}$;

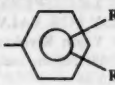
R is H, F, Cl, Br, NO_2, CF_3, C_1–C_3 alkyl or C_1–C_3 alkoxy;

R_1 is H or C_1–C_4 alkyl;

R_2 is H or CH_3;

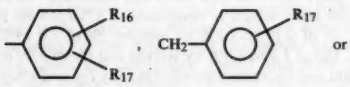
R_8 is H, CH_3 or OCH_3;

R_{11} is H, C_1–C_5 alkyl, C_2–C_3 alkenyl, C_2–C_3 alkynyl, C_3–C_4 cycloalkyl,



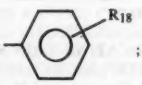
C_1–C_4 alkyl substituted with 1–4 substituents selected from 0–3 F, 0–3 Cl or 0–3 Br or C_2–C_3 alkenyl substituted with 1–3 Cl;

R_{12} is H, C_1–C_6 alkyl, C_3–C_4 alkenyl, C_5–C_6 cycloalkyl,



C_5–C_6 cycloalkyl substituted with CH_3;

R_{13} is C_1–C_6 alkyl or



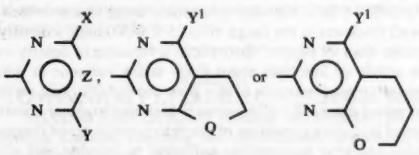
R_{14} and R_{15} are independently H, NO_2, CH_3, Cl or OCH_3;

R_{16} is H, F, Cl, Br, C_1–C_3 alkyl, NO_2, CN, SO_2CH_3, OCH_3, SCH_3 or CF_3;

R_{17} is H, Cl or C_1–C_3 alkyl;

R_{18} is H, CH_3 or Cl;

A is



W is O or S;

X is H, Cl, Br, CH_3, CH_2CH_3, C_1–C_3 alkoxy, CF_3, SCH_3 or CH_2OCH_3;

Y is CH_3 or OCH_3;

Z is N, CH, CCl, CBr, CCN, CCH_3, CCH_2CH_3, CCH_2CH_2Cl or $CCH_2CH{=}CH_2$;

Y^1 is H, CH_3, OCH_3 or OCH_2CH_3; and

Q is O or CH_2;

and their agriculturally suitable salts; provided that when W is S, then R_8 is H.

14. A composition for the control of undesirable vegetation consisting essentially of a compound of claim **1** and at least one of (a) a surface-active agent and (b) a solid or liquid diluent.

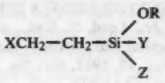
4,332,612

PLANT GROWTH PROMOTING COMPOSITION

Michael J. Brown, Randolph, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,446
Int. Cl.³ A01N *43/36, 55/00, 31/00*
U.S. Cl. 71—95 **15 Claims**

1. A plant growth promoting composition consisting essentially of an effective amount of the mixture of N-methylpyrrolidone, and a silane having the formula:



wherein

X is a chlorine, bromine or iodine atom;

Y and Z are each independently —OR; halogen; alkenyl of 3 to 8 carbon atoms or alkyl of 1 to 12 carbon atoms, both optionally substituted with halogen; and

R is hydrogen; alkenyl of 2 to 8 carbon atoms optionally substituted with halogen; alkyl of 1 to 12 carbon atoms optionally substituted with halogen, phenoxy or lower alkoxy;

benzyl or phenyl, both optionally substituted with halogen, lower alkyl or lower alkoxy, said N-heterocyclic amide and silane being combined in a mole ratio between about 0.05:1 and about 5:1.

4,332,613

SOLUTIONS OF BROMOXYNIL AND IOXYNIL

James E. Esposito, Chalfont, Pa., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 26, 1979, Ser. No. 106,739
Int. Cl.³ A01N *37/34*
U.S. Cl. 71—105 **12 Claims**

1. A herbicidal solution containing at least one ester selected from the group consisting of 2,6-dibromo-4-cyanophenyl n-octanoate and 2,6-diiodo-4-cyanophenyl n-octanoate and at least one ester selected from the group consisting of 2,6-dibromo-4-cyanophenyl n-butyrate and 2,6-diiodo-4-cyanophenyl n-butyrate wherein from 20 mol. percent to 60 mole percent of such moiety is present as n-butyric acid ester and from 40 mol. percent to 80 mol percent is present as n-octanoic acid ester having from 200 g/L to 800 g/L of the 2,6-dihalo-4-cyanophenoxy moiety dissolved in a high aromatic content, petroleum-base oil, said solution having a crystallization temperature lower than that of a like solution containing a like concentration of 2,6-dihalo-4-cyanophenoxy moiety wherein such moiety is present as only one of 2,6-dihalo-4-cyanophenyl n-octanoate or 2,6-dihalo-4-cyanophenyl n-butyrate.

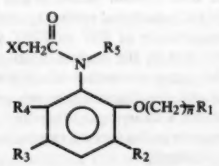
4,332,614

HERBICIDAL 2-HALOACETANTLIDES

Gerhard H. Alt, University City, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 25, 1980, Ser. No. 133,765
Int. Cl.³ A01N *37/22;* **C07C** *103/34*
U.S. Cl. 71—118 **6 Claims**

1. A compound of the formula



wherein

X is chloro, bromo or iodo,

R_1 is lower alkoxy,

R_2 and R_3 are independently hydrogen, lower alkyl or $-CF_3$,

R_4 is C_{1-10} alkyl,

R_5 is C_{2-8} alkoxyalkyl and

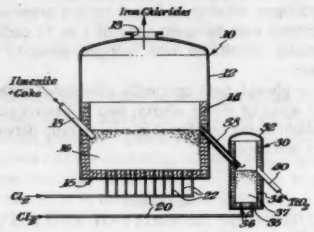
n is 1 or 2.

4,332,615

PROCESS FOR BENEFICIATING A TITANIFEROUS ORE

Wendell D. Dunn, Jr., Lead, S. Dak., assignor to Titanium Technology (Australia) Ltd., Sydney, Australia

Filed Jun. 29, 1981, Ser. No. 278,872
Int. Cl.[3] C22B *1/08, 1/10*
U.S. Cl. 75—1 TI 4 Claims



1. A process for beneficiation of a titaniferous ore to a polycrystalling rutile having a low iron oxide content without the loss of appreciable titanium values as titanium tetrachloride comprising continuously adding a mixture of a particulate, titaniferous ore and carbon to a first stage gas-solids reactor containing a preformed bed of a partially beneficiated ore comprising particulate titaniferous ore and 10 to 25%, by weight, particulate carbon, said bed having an iron oxide content of 5%, by weight, calculated as Fe_2O_3, said bed having a temperature of 900° to 1090° C., continuously injecting into the bed a gas selected from the group consisting of chlorine, chlorine and oxygen, chlorine and air, chlorine, oxygen and diluent gas, and chlorine, air and diluent gas, at a rate whereby in the first reactor the temperature is maintained, the bed is fluidized and iron oxide in the titaniferous ore is converted into iron chloride vapor, the iron content of the bed is maintained, and less than 2% of the chlorine values are converted to escaping $TiCl_4$; continuously transporting a portion of the bed of the first reactor to a second stage reactor at a rate which maintains constant bed depth in the first reactor, with the proviso that the ratio of the diameters of the first reactor and the second reactor is in the range of 10 to 1, said second reactor containing therein a bed of particulate partially beneficiated ore and carbon wherein the iron content of the ore is in the range of 0.1–1.0%, by weight, calculated as Fe_2O_3; said second reactor bed having a temperature of 900° to 1090° C.; continuously injecting into the bed in the second reactor a reaction gas selected from the group consisting of chlorine, chlorine and oxygen, chlorine and air, chlorine, oxygen and a diluent gas, and chlorine, air and a diluent gas wherein:

(i) said temperature in the second reactor is is maintained,
(ii) the bed is fluidized,
(iii) iron oxide in the partially beneficiated ore is converted to an iron chloride vapor,
(iv) simultaneously with the formation of iron chlorides substantial quantities of $TiCl_4$ are formed,
(v) maintaining the iron content of the bed in the second reactor and in the range of 0.1 to 1.0%, by weight Fe_2O_3, and
(vi) continuously removing a portion of the bed in second reactor to maintain therein a constant bed depth.

4,332,616

HARD-PARTICLE DISPERSION TYPE SINTERED-ALLOY FOR VALVE SEAT USE

Tsuyoshi Morishita; Koji Yagii; Kiyokazu Inmaru, and Kenji Miyake, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 4, 1980, Ser. No. 156,350
Claims priority, application Japan, Jun. 13, 1979, 54/74902
Int. Cl.[3] B22F *3/00*
U.S. Cl. 75—243 3 Claims

1. A hard-particle dispersion type sintered-alloy having a structure composed of hard particles, a Cu alloy phase and refined pearlite for use as a valve seat consisting essentially of a sintered alloy which is composed of C of 0.4 to 1.3% by weight, Si of 0.15 to 1.2% by weight, Ni of 2.0 to 7.5% by weight, Mo of 1.5 to 8.0% by weight and Cu of 13.0 to 22.0% by weight and the remainder substantially Fe, said alloy having dispersed therein hard particles composed of Si of 4 to 7% by weight, Ni of 20 to 30% by weight, Mo of 30 to 40% by weight and the balance substantially Fe, said hard particles constituting 5 to 20% by weight of the alloy.

4,332,617

METHOD OF FABRICATING THIN-WALLED ARTICLES OF TUNGSTEN-NICKEL-IRON ALLOY

Victor M. Hovis, Jr., Kingston, and Walter G. Northcutt, Jr., Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 18, 1979, Ser. No. 76,528
Int. Cl.[3] B22F *5/00*
U.S. Cl. 75—214 2 Claims

1. A method of fabricating an article of tungsten-nickel-iron alloy formed of 90 to 97 wt.% tungsten, 7 to 2.1 wt.% iron, and 3 to 0.09 wt.% nickel with said article being characterized by a wall thickness in the range of 0.025 to 0.500 inch, a density of greater than 99 percent theoretical, a variance in density over the article of less than about 0.5% and a variance in tensile strength over the article of less than about 4.0%, said method consisting essentially of the steps of blending together constituents of said alloy consisting of discrete particulates of tungsten, nickel and iron in quantities sufficient to provide said alloy, injecting a sufficient quantity of the blended particulates into a plasma stream for spraying the alloy constituents onto a mandrel to form a structure of the alloy constituents with a wall thickness substantially in said range, separating the structure from the mandrel, and thereafter heating the plasma-sprayed structure to a temperature sufficient to liquefy a minor phase of the alloy constituents for forming said alloy by liquid-phase sintering.

4,332,618

THERMAL BARRIER COATING

Norman E. Ballard, Derby, England, assignor to Rolls-Royce Limited, London, England

Filed May 8, 1981, Ser. No. 261,938
Claims priority, application United Kingdom, Jul. 25, 1980, 8024433
Int. Cl.[3] C04B *19/04*
U.S. Cl. 106—84 7 Claims

1. A coating composition for use as a thermal barrier coating comprising a mixture containing constituents of finely divided hollow glass microspheres, a ceramic frit of finely divided particles of an alkali silicate titanate glass and finely divided particles of a refractory filler material selected from the group consisting of micronized mica, aluminum oxide and mullite, the ratio of the refractory filler material to the hollow glass microspheres to the alkali silicate titanate glass varying from 40:33:27, all in parts by weight so that any one of said constituents may be reduced by up to 50% by weight and the weight of each of the remaining constituents is increased in weight by

half said reduction in weight of said one constituent, said constituents being suspended in a binder material.

4,332,619

EXPANSIVE ADMIXTURE

Richard G. Gandy, Grand Prairie, Tex., and Garry L. Briggs, Edmonton, Canada, assignors to BJ-Hughes Inc., Houston, Tex.

Filed Nov. 13, 1980, Ser. No. 206,507
Int. Cl.³ C04B *7/353*
U.S. Cl. 106—87 **5 Claims**

4. A cement composition of the type used to cement the annular space between the pipe and surrounding formation in oil and gas wells comprising cement, sufficient water to effect hydraulic setting of the cement, and an effective amount of an expansive admixture comprising coated aluminum particles wherein said coated aluminum particles are coated with a gasoline and water insoluble wood resin, activated charcoal, and a fluid loss additive.

4,332,620

COLORED PAVING COMPOSITION

Robert L. Quinn, 6320 Falls Rd., Baltimore, Md. 21209

Filed Sep. 29, 1980, Ser. No. 191,902
Int. Cl.³ C08K *3/22;* **C08L** *7/00, 9/00, 95/00*
U.S. Cl. 523—220 **3 Claims**

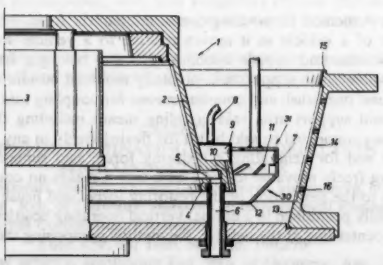
1. As asphaltic paving composition having a color other than black, and requiring no after treatments, comprised of sand and stone screenings in an amount of forty-five percent to eighty percent, a black bituminous binder therefor selected from a group consisting of tar and asphalt in an amount of six percent to twenty-eight percent, and a metallic oxide coloring agent selected from the group consisting of ferric oxide and chromium oxide in an amount of four percent to twenty percent said sand and stone screenings having a maximum particle size of approximately ⅛ inch.

4,332,621

CONTINUOUSLY OPERABLE CENTRIFUGAL FOR MIXING AND CURING SUGAR MASSECUITES

Heinrich Kurland, Lucklum; Helmut Schaper, Brunswick, and Joachim Schueller, Walle, all of Fed. Rep. of Germany, assignors to Braunschweigische Maschinenbauanstalt, Brunswick, Fed. Rep. of Germany

Filed Nov. 13, 1980, Ser. No. 206,641
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948691
Int. Cl.³ C13F *1/06, 1/10*
U.S. Cl. 127—19 **8 Claims**



1. A continuously operable sugar centrifuge for mixing and curing sugar massecuites comprising: acceleration bell means comprising downwardly opening centrifugal inner basket means mounted for rotation about a vertical axis, said inner basket means having separated screen means for preworking and separating sugar massecuites into sugar and syrup and a lower edge for delivering separated sugar; upwardly opening centrifugal outer basket means mounted for rotation coaxially about the inner basket means and having an upper edge for delivering sugar; intermediate mixing means comprising ring housing means intermediate the inner and outer basket means being positioned around the lower edge of the inner basket means and open at the inside for receiving sugar delivered over the lower edge of the inner basket means, said ring housing means being independently mounted for movement about the inner basket means, said ring housing means being formed with an upwardly and outwardly sloping impact zone, a partially enclosing retaining zone over the impact zone, and inclined baffle means arranged around the circumference of the ring housing means for imparting turbulence, said retaining zone having an inner edge and said sloping impact zone having an inner edge of greater diameter than the inner edge of the retaining zone for delivering sugar after mixing to the outer basket means; and mixing liquid feeding means comprising annular tank means outside the inner basket means with downwardly and outwardly extending duct means leading toward the lower edge of the inner basket means for introducing mixing liquid into sugar delivered over the lower edge of the inner basket means for turbulent mixing with the sugar in the intermediate mixing means.

4,332,622

DIRECT PRODUCTION OF A PURE SUGAR PRODUCT FROM CANE JUICE

Otto G. Hohnerlein, Jr., Savannah; Willie E. Smith, Jr., Tybee Island, and Nicholas T. Rimedio, Sr., Savannah, all of Ga., assignors to Savannah Foods & Industries, Inc., Savannah, Ga.

Filed Aug. 25, 1980, Ser. No. 181,234
Int. Cl.³ C13K *3/00;* **C13D** *3/14*
U.S. Cl. 127—41 **15 Claims**

1. A process for the production of a finished sugar product composed chiefly of glucose and fructose directly from cane juice without the concurrent production of raw sugar, molasses, or mixtures thereof, said process comprising the steps of:

(a) acidifying the cane juice to a pH less than its naturally occurring pH and heating the acidified juice at a temperature ranging from between about 40° to about 95° C. for a period of time sufficient to convert at least 95% of sucrose to glucose and fructose;

(b) adjusting the pH of the product of step (a) to about 5.2 to form a floc;

(c) separating the floc from the juice and passing the juice through a filter aid to form a clear solution;

(d) subjecting the clear solution to demineralization and decolorization by passing the solution sequentially through a decolorizer resin, cation resin, and anion exchange resin, without the concurrent production of raw sugar, molasses or mixtures thereof;

(e) passing the solution obtained in step (d) through a bone char filter to remove cane flavors and odors;

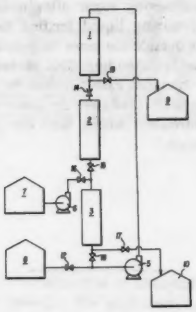
(f) passing the effluent obtained in step (e) over a cation exchange resin, and an anion exchange resin; and

(g) concentrating the effluent to at least about 70% solids whereby a clear, colorless, and odorless finished liquid product is obtained which is substantially free from impurities.

4,332,623
ADSORPTION SEPARATION METHOD AND APPARATUS THEREOF

Masao Ando, Musachino; Tetsuya Hirota, Fujisawa, and Katashi Shioda, Machida, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Nov. 1, 1979, Ser. No. 90,133
Claims priority, application Japan, Nov. 2, 1978, 53-135312; Dec. 28, 1978, 53-163720; Mar. 13, 1979, 54-29126; Sep. 3, 1979, 54-112642
Int. Cl.[3] C13K *1/00, 3/00*
U.S. Cl. 127—46.2 14 Claims



1. A batch-wise method for separating a starting fluid containing at least one component which is easy to adsorb and at least one component which is hard to adsorb into the respective components by the use of an adsorption separator which comprises a packed bed where an adsorbent for such components is packed and a fluid passage connecting the front and rear ends of said packed bed so that the fluid is able to be circulated, the method comprising

a first step of feeding the starting fluid comprising at least one component which is easy to adsorb and at least one component which is hard to adsorb through a feed port which is fixed at an intermediate portion of the packed bed while withdrawing from the packed bed a fluid rich with either of the components in an amount equal to the feed of the starting fluid from a position downstream of the fixed feed port,

a second step of stopping the feed of the starting fluid to and the withdrawal of fluid from the packed bed and moving the fluid remaining in the packed bed toward the downward direction, and

a third step of feeding a desorbent fluid to the packed bed while withdrawing from the packed bed a fluid or fluids rich with either of the components in an amount equal to the feed of the desorbent fluid from a position or positions downstream of the desorbent feed port, the withdrawals of fluid from the packed bed being conducted at at least two different positions, the adsorption bands being left in part of the packed bed in the third step, and repeating the above steps;

wherein the method comprises at least one step wherein fluid is flowing through a section of said packed bed, while simultaneously said fluid remains essentially stationary in the remaining sections.

4,332,624
METHOD OF CLEANING A FIRED THICK FILM COPPER LAYER

Jay P. Page, Phoenix, Ariz., and Arthur H. Mones, Edina, Minn., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 3, 1980, Ser. No. 212,763
Int. Cl.[3] B08B *3/08;* C23G *1/10*
U.S. Cl. 134—3 4 Claims

1. The method of cleaning exposed surfaces of a fired layer of thick film copper paste on a multilayer substrate, which layer has been applied to a fired layer of a dielectric containing glass frit on the substrate, comprising the steps of:

heating a weak solution consisting essentially of HBF_4 in amounts of up to 5%;

immersing the substrate in said solution for a period of time of from 10–20 seconds;

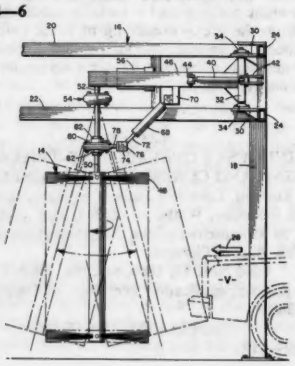
removing the substrate from the solution after said period of time has elapsed; and

rinsing the substrate to remove substantially all of said solution.

4,332,625
METHOD FOR BRUSHING THE FRONT, SIDES AND REAR OF A VEHICLE

George T. Ennis, Playa Del Rey, Calif., assignor to N/S Car Wash Enterprises, Inc., Sharon, Pa.

Division of Ser. No. 883,514, Mar. 6, 1978, Pat. No. 4,225,995.
This application May 5, 1980, Ser. No. 144,027
The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.
Int. Cl.[3] B08B *1/04;* B60S *1/00*
U.S. Cl. 134—6 2 Claims



1. A method for washing one or more of the front, sides and rear of a vehicle as it moves relative to a vehicle washing apparatus, said vehicle washing apparatus having a frame, a movable brush support arm pivotally mounted on said frame, at least one brush and coupling means for coupling said brush to said support arm, said coupling means including flexible means connected to said brush for flexing freely in any direction and for generating a restoring force, said support arm being freely movable to the extent that it makes no contribution to the generation of the restoring force, said brush being initially positioned in a normal vertical operating position near the center line of the vehicle, the method comprising the steps of:

engaging the front end of the vehicle with said brush;

rotating said brush in a direction which causes said brush to walk along the surfaces of the vehicle and said arm to pivot due to the reactive force between the surfaces of the vehicle and said brush;

tilting said brush by flexing said flexible means in response to the engagement of said brush with the front end of the vehicle, said flexible means urging said brush toward its

normal vertical position by generating the total restoring force equal in all directions in response to the flexing of said flexible means;

moving said brush around the front corner of the vehicle in response to the combined action of the reactive force between said brush and the surfaces of the vehicle and the restoring force generated by said flexible means; and

engaging the side of the vehicle with said brush.

4,332,626

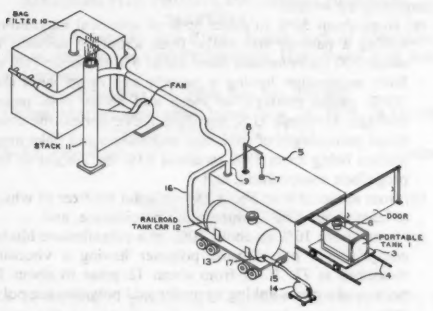
METHOD FOR REMOVING LIQUID RESIDUES FROM VESSELS BY COMBUSTION

Oscar L. Hood, Beaumont, and Irvin V. Lytton, Dickinson, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 72,703, Sep. 4, 1979, abandoned. This application Apr. 22, 1981, Ser. No. 256,437

Int. Cl.³ B08B 9/08

U.S. Cl. 134—11 **16 Claims**



1. A non-catalytic method of decontaminating vessels used for storing, transporting, or processing oxidizable liquid organic chemicals, which comprises:

a. introducing oxygen and a source of heat directly into the interior of the vessel, said vessel containing minor contaminating amounts of said liquid organic chemical, the heat emitted from said heat source being sufficient to heat the interior surfaces of the vessel to a temperature sufficient to volatilize substantially all and decompose at least a portion of said oxidizable liquid organic chemical contaminating the interior of said vessel, thereby to produce combustion gas within the vessel;

b. exhausting from the vessel combustion gas resulting from step (a);

c. filtering particulates from the exhausted combustion gas and decomposing with heat volatilized organic chemical remaining in the combustion gas exhausted from the vessel; and

d. venting to the atmosphere combustion gas substantially free of said particulates and oxidizable organic chemical.

4,332,627

METHOD OF ELIMINATING LATTICE DEFECTS IN A SEMICONDUCTOR DEVICE

Alfred Schmitt, Boeblingen, and Gerd Schorer, Herrenberg, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,270

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917455

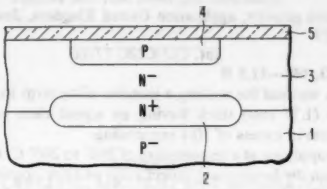
Int. Cl.³ H01L 21/265, 3/14; B01J 17/00

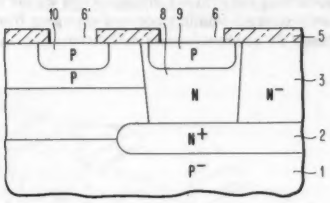
U.S. Cl. 148—1.5 **6 Claims**

1. Method of making defect-free phosphorus implanted zones in a silicon monocrystalline substrate comprising:

implanting phosphorus ions in said zones of said substrate;

implanting ions selected from the group consisting of antimony and arsenic in said zones with about the same or a greater implantation depth than the phosphorus ions to cause the silicon in said zones to become amorphous whereby the defects caused by the phosphorus implantation are included in the amorphous silicon material, and





annealing the structure after said implantations have been performed to cause said zones of amorphous silicon to be converted to defect-free monocrystalline silicon.

4,332,628

SELECTIVE ABSORBER OF SOLAR ENERGY AND PROCESS FOR PRODUCING SAME

Makoto Andoh, Nagoya, Japan, assignor to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Feb. 6, 1981, Ser. No. 232,228

Claims priority, application Japan, Feb. 20, 1980, 55-19853

Int. Cl.³ C23F 7/06, 7/26

U.S. Cl. 148—6.2 **14 Claims**

1. A process for producing a selective absorber of solar energy, which comprises the steps of

subjecting a smooth-surfaced substrate of an aluminum alloy material, containing at least about 0.1% by weight of magnesium and having a specular reflectance of at least 50% at an incident angle of 60°, to a chemical conversion treatment in an aqueous solution containing chromate and/or dichromate to form a chromium-containing chemical conversion coating on a surface of said substrate, and

subsequently subjecting the substrate to an oxidation treatment at a temperature of 400°-600° C. and for a time sufficient without a positive circulation of atmosphere at least in the vicinity of said surface to convert said chemical conversion coating into an oxidized, dark-colored coating having high solar absorptance and low thermal emissivity.

4,332,629

METHOD OF MAKING EXTENDED STRIP OF LEAD-ANTIMONY ALLOYS FOR BATTERY ELECTRODES

John McWhinnie, Bolton, England, assignor to Chloride Group Limited, London, England

Filed Jun. 25, 1980, Ser. No. 162,951

Claims priority, application United Kingdom, Jun. 29, 1979, 7922673

Int. Cl.[3] C22C *11/00*

U.S. Cl. 148—11.5 R 8 Claims

1. A method for making a metallic alloy strip less than 0.05 inches (1.27 mm) thick having an aspect ratio of width to thickness in excess of 10:1 comprising:

(a) supplying at a temperature of 200° to 280° C. to an extrusion die having said aspect ratio an alloy consisting essentially of antimony 1–2.5% by weight with the balance lead and inevitable impurities;

(b) forcing said alloy through said extrusion die; and

(c) quenching the strip as it emerges from the die whereby its tensile strength within 6 hours of emerging from the die is at least 35 newtons/square millimeter.

4,332,630

CONTINUOUS COOLING OF LOW CARBON STEEL WIRE ROD

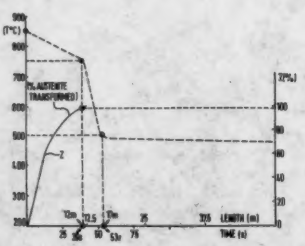
Marios Economopoulos, Liege, and Nicole Lambert, Waremme, both of Belgium, assignors to Centre de Recherches Metallurgie-Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Oct. 24, 1980, Ser. No. 200,512

Claims priority, application Luxembourg, Oct. 26, 1979, 81824; Jan. 29, 1980, 82114

Int. Cl.[3] C21D *9/52*

U.S. Cl. 148—12 B 22 Claims



1. A method for the continuous cooling of low carbon steel wire rod (C≦0.4%) on discharge from a rolling mill, the wire rod having been brought to a temperature of between 900° C. and 780° C., the method comprising the sequential steps of disposing the rod in loose turns on a conveyor means; subjecting the wire rod in turns on the conveyor means to a first slow cooling stage until the allotropic transformation of austenite to ferrite has taken place to at least 80%; subjecting the wire rod, whilst still on the conveyor means, to a rapid cooling stage to a temperature of between 350°0 C. and 560° C.; and subjecting the rod to a second slow cooling stage, the rapid cooling stage occuring at a rate such that at least the major part of the carbon remaining in supersaturation at the end of the first slow cooling stage is still in supersaturation at the beginning of the second slow cooling stage.

4,332,631

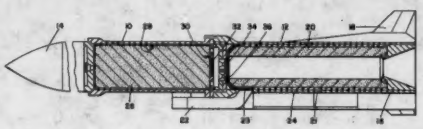
CASTABLE SILICONE BASED MAGNESIUM FUELED PROPELLANT

Charles H. Herty, III, and Samuel E. McClendon, both of Waco, Tex., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jun. 19, 1980, Ser. No. 164,730

Int. Cl.[3] C06B *45/10*

U.S. Cl. 149—19.2 3 Claims



1. A castable solid propellant composition suitable for use as a fuel generator for a ducted rocket motor, said composition comprising by weight

(a) from about 50% to about 55% of spherical magnesium having a particle size range from about 44 microns to about 500 microns, and from about 5% to about 13% of flake magnesium having a particle size range such that 100% passes through 40 mesh and about 98% passes through 325 mesh U.S. Standard Sieve Series, the combined percentages of spherical magnesium and flake magnesium being from 55% to about 63% by weight of the propellant composition, and

(b) from about 18% to about 25% of solid oxidizer of which at least about 80% is ammonium perchlorate, and

(c) from about 16% to about 20% of a polysiloxane binder comprising a polysiloxane polymer having a viscosity measured at 77° F. of from about 12 poise to about 50 poise, and a cross-linking agent for said polysiloxane polymer,

the weight ratio of solid oxidizer to polysiloxane polymer being from about 0.9/1 to about 1.5/1.

4,332,632

SOLID PROPELLANT COMPOSITION

John A. Conyers, Fort Worth, Tex.; Adolph E. Oberth, Fair Oaks, and George M. Santerre, Sacramento, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1971, Ser. No. 161,364

Int. Cl.[3] C06B *45/10*

U.S. Cl. 149—19.2 10 Claims

1. A propellant composition, having good thermal cycling ability, consisting essentially of:

(1) 60–85 weight percent ammonium perchlorate;

(2) 2–26 weight percent aluminum;

(3) 2.5–7.5 weight percent poly (1,2-butylene) glycol with a molecular weight of about 1600 to about 2400;

(4) about 1–4 weight percent of a polyoxypropylene derivative of a triol selected from the group consisting of (a) the reaction product of propylene oxide and trimethylolpropane having a molecular weight of between about 3500 and 4700, (b) the reaction product of propylene oxide and hexane triol having a molecular weight of between about 3500 and 4700 and (c) mixtures thereof;

(5) 0.25–0.35 weight percent 2,3-dihydroxypropyl-bis (2-cyanoethyl) amine;

(6) 0.70–1.00 weight percent hexamethylene diisocyanate;

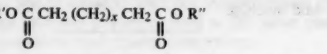
(7) 1.5–3.0 weight percent copper chromite;

(8) 2.5–4.5 weight percent of a carboxylic acid ester selected from the group consisting of

$$CH_3-(CH_2)_n\overset{\overset{O}{\|}}{C}\,O\,R\,O\,C\,(CH_2)_m\,CH_3 \qquad (a)$$

wherein n and m vary independently and are intergers

from 5–9 inclusive and R is alkylene of 6–12 carbon atoms,



(b)

wherein X is an interger between 1 and 6 inclusive and R′ and R″ vary independently and are alkyl of 6–12 carbon atoms and (c) mixtures thereof;

(9) 0–0.20 weight percent of a metal acetylacetonate;

(10) 0.05–0.2 weight percent sulfur;

(11) 0–0.015 weight percent 2,4-pentanedione; and

(12) 0–0.01 weight percent liquid silicon oil, provided that when no metal acetylacetonate is present, no 2,4-pentanedione is present.

4,332,633

METHOD FOR PRODUCING SHOULDER PAD MATERIAL

Katsuyoshi Yamauchi, and Kiyoto Nakai, both of Moriyama, Japan, assignors to Carl Freudenberg, Hohnerweg, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,803

Claims priority, application Japan, Nov. 26, 1979, 54-153168

Int. Cl.³ B32B *27/02, 31/18*

U.S. Cl. 156—62.2 **2 Claims**

1. A method of producing a shoulder pad blank having a thick-walled portion and a thin-walled portion comprising cutting a sheet of shoulder pad stock material sinusoidally into two intermediate blanks each having a plurality of ridges spaced a predetermined distance from each other, cutting the ridges sinusoidally along their length, subdividing the blank into individual blanks comprising a thick mountainous center surrounded by a thin section, and cutting the individual blanks in half through the mountainous center.

4,332,634

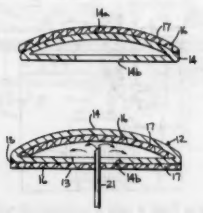
METHOD OF PREPARING A RESEALABLE VALVE

Steven M. Aperavich, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Filed Jan. 14, 1981, Ser. No. 224,963

Int. Cl.³ A63B *39/00;* B29C *17/00, 19/00;* A41C *3/10*

U.S. Cl. 156—145 **3 Claims**



1. A method of preparing a resealable valve which has a resealable inner core and an outer reinforced cover which comprises first molding a hollow shell having a domed top and a bottom with a central opening, turning the shell inside out, affixing a layer containing reinforcing fabric to the inside of the domed top, turning the shell right side out and covering the bottom including the central opening with a layer containing reinforcing fabric to complete the cover, filling the thus formed cover with an uncured elastomer and then curing the cover and its elastomer contents to form a resealable valve having a resealable hard gel inner core and an outer reinforced protective cover.

4,332,635

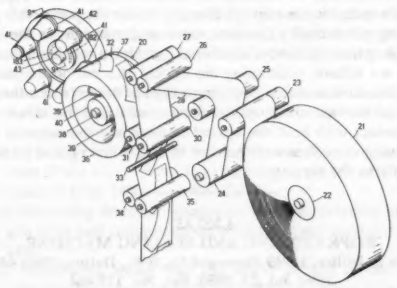
CUP LABELING METHOD AND APPARATUS

Winnon G. Holbrook, Appleton, and Adrian J. Kettenhofen, Neenah, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Jul. 3, 1980, Ser. No. 165,739

Int. Cl.³ B65C *9/04*

U.S. Cl. 156—256 **23 Claims**



1. Cup labeling apparatus comprising:

(a) a die roller having cutting edges on its surface defining an annulus sector cutting pattern;

(b) an anvil roller having a hard cylindrical surface which is mounted to rotate with its surface in engagement with the cutting edges on the die roller whereby a label will be severed in the shape of the cutting edge pattern from a web of paper having heat activable adhesive coated on one side which is passed between the anvil and die rollers, the anvil roller having a plurality of ports distributed over its surface which are positioned to underlie a label cut by the cutting edges;

(c) means for providing a vacuum draw to the ports on the surface of the anvil roller to hold a severed label thereon as the roller is rotating and to release the vacuum draw at a selected position such that the label is released from the anvil roller;

(d) a moving heating surface positioned to receive a label released from the anvil roller with the heat activable side of the label facing away from the heating surface;

(e) means for heating the labels on the heating surface to activate the adhesive thereon; and

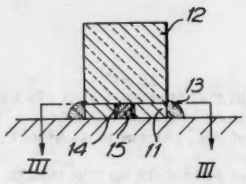
(f) means for bringing frustum shaped formed cups into rotating surface contact with the heated labels on the moving heating surface at a cup labeling position including cup holding mandrels having a surface shape conforming substantially to the inner surface of the cups to be labeled, the mandrel and the cup held thereon in the cup labeling position being rotated at a surface speed which is greater than the speed of the heating surface to draw the labels off of the surface and into adhesive contact with the surface of the cups.

4,332,636

METHOD OF BONDING AN OPTICAL ELEMENT TO A SUPPORT

John McLeod, Edinburgh, Scotland, assignor to Ferranti Limited, Cheadle, England

Filed Apr. 14, 1980, Ser. No. 140,011
Claims priority, application United Kingdom, May 3, 1979, 7915506
Int. Cl.³ B32B 31/24, 7/14
U.S. Cl. 156—289 6 Claims



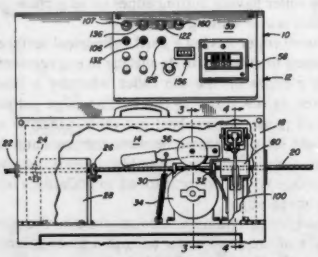
1. A method of bonding an optical element to a support which includes the steps of forming on the support a thin pad having substantially the same external dimensions as the base of the optical element of a material to which a suitable adhesive will not adhere, positioning the optical element on the pad in the desired orientation, applying a fillet of the suitable adhesive around the base of the optical element such that the adhesive is in contact with both the optical element and the support, and allowing the adhesive to set and to secure the optical element rigidly to the support.

4,332,637

ROPE CUTTING AND SEALING MACHINE

Alvin L. Miller, 14949 Stanwood St., SW., Dalton, Ohio 44618

Filed Jul. 23, 1980, Ser. No. 171,464
Int. Cl.³ B32B 31/00
U.S. Cl. 156—353 19 Claims



1. A rope cutting and sealing machine for severing predetermined lengths of rope from a supply of rope and fusing the severed ends, said machine comprising:

a housing;

a control panel disposed in an accessible position on said housing;

a die block having an opening disposed therein for receiving said rope to be cut;

rope feed means for feeding a predetermined length of rope through said die block;

heater means for heating air to be applied to said rope to be cut;

blower means connected to said die block for blowing air heated by said heater means onto a portion of the rope disposed in said die block thereby fusing that portion of rope;

cutter means connected to said die block for severing the rope disposed therein; and

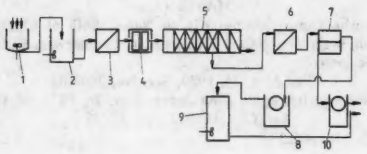
control means for controlling automatic cyclic operation of said machine.

4,332,638

METHOD AND APPARATUS FOR THE RECOVERY OF A SUSPENSION OF FIBROUS MATERIAL FROM MIXED WASTE PAPER

Eberhard Mauer; Siegbert Fischer, and Lothar Pfalzer, all of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 125,890
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908660
Int. Cl.³ D21B 1/32
U.S. Cl. 162—4 16 Claims



1. Method for recovery of a fiber suspension from mixed waste paper which includes ink containing fibers, comprising the steps of:

separating said fibers into a long-fiber fraction and a short-fiber fration;

treating said separated fiber fractions in separate and substantially different deinking operations for generally deinking and cleaning said fiber fractions; and thereafter

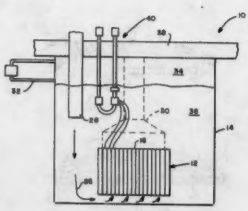
combining said separately cleaned fiber fractions to form a slurry of deinked waste paper.

4,332,639

FAILED ELEMENT DETECTION AND LOCATION SYSTEM AND METHOD FOR USE IN A NUCLEAR REACTOR

Robert O. Crosgrove, Chatsworth; Edward Moody, Simi, and Harold L. Sletten, Northridge, all of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 21, 1979, Ser. No. 13,409
Int. Cl.³ G21C 17/00
U.S. Cl. 376—253 6 Claims



1. In a nuclear reactor of the type having an internal core housed within a vessel, and a plurality of fuel assemblies housed within said core, each of said fuel assemblies including an open container having an inlet and outlet and an active substance such as plutonium oxide sealed within a relatively large number of elongated hollow pins located within said container, said reactor also including liquid metal heat exchanging fluid such as liquid sodium and means for circulating

a stream of said fluid along a path, a section of which passes through said containers from their inlets to said outlets, a system for detecting breaks in said hollow pins, which breaks are of sufficient size to cause at least one predetermined contaminant to pass into said stream of fluid as the latter passes through said containers, said system comprising:

first means including a first pump for collecting a combined sample of said fluid at the outlets of at least a group of said fuel assembly containers;

first means for detecting the presence or absence of said contaminant in said combined sample, whereby to indicate the presence or absence of a break in at least one pin in said group of fuel assemblies;

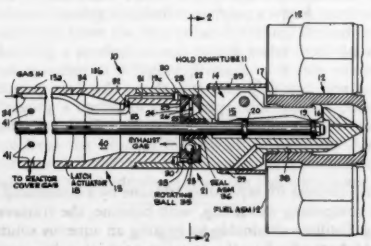
second means including a second pump having a lower flow rate capability than said first pump for selectively collecting individual samples of said fluid, one at a time, at the outlets of the fuel assembly containers in said group in the event said combined sample detecting means indicates the presence of a pin break said individual sample collecting second means including valve means for collecting said individual samples one at a time, said valve means including a main housing having wall means defining a plurality of spaced openings therethrough, said openings corresponding to and being in fluid communication with the outlets of said group of fuel assembly containers, respectively, a valve head located within said main housing and adapted for positioning in fluid communication with said openings individually, whereby to collect said individual fluid samples, and means for moving said valve head between said fluid communicating positions without engaging the inner surface of said wall means during movement of the valve head between said positions; and

second means including a single detector for detecting the presence or absence of said contaminant in each of said individual samples, whereby to indicate the fuel assembly or assemblies responsible for the presence of said contaminant.

4,332,640
VIBRATING FUEL GRAPPLE

Alan J. Chertock, deceased, late of San Francisco, Calif. (by Theodore E. Hlavac, Jr., beneficiary); Jack N. Fox, San Jose, and Robert B. Weissinger, Santa Clara, both of Calif., assignors to The United States of America as represented by the United State Department of Energy, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 34,229
Int. Cl.³ G21C *19/20*
U.S. Cl. 376—264 **10 Claims**

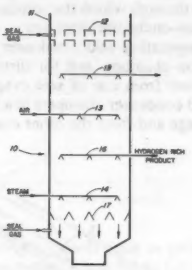


1. A method for loosening a stuck fuel assembly in the core of a reactor and increasing the withdrawal capability without exceeding an allowable axial force safety limit exerted on a fuel assembly while removing same from a reactor core comprising the steps of: attaching a grapple mechanism to a fuel assembly to be removed, transmitting a vibrational force to the fuel assembly for loosening the assembly in a reactor core, and applying axial force to the fuel assembly for removing same from a reactor core without exceeding an allowable axial force safety limit.

4,332,641
PROCESS FOR PRODUCING CALCINED COKE AND RICH SYNTHESIS GAS

James R. McConaghy, and Ardis L. Anderson, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Dec. 22, 1980, Ser. No. 219,007
Int. Cl.³ C10B *49/06;* C10J *3/66, 3/68, 3/82*
U.S. Cl. 201—17 **4 Claims**



1. A method of calcining green petroleum coke to produce calcined coke and a gas stream which is high in hydrogen content and low in nitrogen content consisting essentially of the steps of:

(a) feeding particulate green petroleum coke into the top of a vertical shaft kiln to provide a downwardly moving bed of coke in the kiln;

(b) injecting combustion air into an intermediate combustion zone of the kiln to provide a calcining section at a temperature of from 1400° to 1600° C.;

(c) recovering internally-generated flue gas including nitrogen from said combustion air from the upper section of the kiln;

(d) introducing steam into the lower section of the kiln whereby the steam contacts hot coke descending from the combustion zone and reacts therewith according to the reaction $C+H_2O \rightleftarrows H_2+CO$ to produce hydrogen and carbon monoxide;

(e) maintaining an upward flow of gas throughout said kiln;

(f) recovering calcined coke product from the operation; and

(g) withdrawing a gas stream comprised of hydrogen and carbon monoxide from a level in the kiln below the combustion zone and above the steam injection level, thereby producing a product gas stream rich in hydrogen and substantially free of nitrogen.

4,332,642
PAIRED STAGE FLASH EVAPORATOR HAVING IMPROVED DISTILLATE COLLECTION

Domenick Cane, Springfield, and Ray D. Peterson, Upper Providence Township, Delaware County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

PCT No. PCT/US81/00852, § 371 Date Jun. 19, 1981, § 102(e) Date Jun. 19, 1981
PCT Filed Jun. 19, 1981, Ser. No. 286,091
Int. Cl.³ B01D *3/06;* C02F *1/06*
U.S. Cl. 202—173 **5 Claims**

1. A multistage flash evaporator unit for a multistage flash evaporation plant wherein successive evaporation stages are operated at successively decreasing pressures to evaporate a solvent from a solution, said evaporator unit comprising:

a generally elongated enclosure having opposed end walls and elongated side and top and bottom walls extending therebetween;

said enclosure having a lower portion where the solvent is evaporated and an upper portion wherein the distillate is condensed;

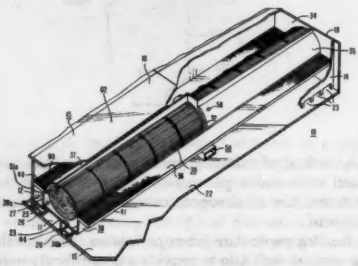
means for dividing said upper enclosure portion into a pair of

separate condenser chambers staged in the longitudinal direction;

condenser means including an array of elongated heat exchanger tubes extending between said end walls to provide tube coolant flow in the longitudinal direction; said tubes extending through apertures in said dividing means;

means for partitioning said enclosure lower portion to define a pair of longitudinally extending separate evaporation chambers through which the solution flows successively in the cross-enclosure direction;

means for separating said condenser chambers from said evaporation chambers and for directing flow of evaporated solvent from one of said evaporation chambers to one of said condenser chambers in a higher pressure evaporation stage and from the other evaporation chamber to



the other condenser chamber in the next lower pressure evaporation stage;

tray means associated with each condenser chamber to collect distillate and direct it toward said dividing means;

duct means extending in the transverse direction and supported generally beneath said dividing means and coupled to said tray means to receive distillate therefrom and to permit flashed vapor through said tray means into the associated condenser chamber; and

means for partitioning said duct means into higher pressure and lower pressure chambers associated respectively with said condenser chambers and for directing distillate from the higher pressure duct chamber to the lower pressure duct chamber.

4,332,643

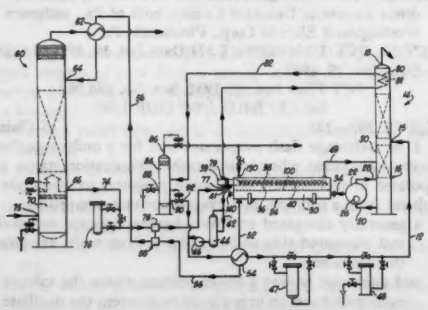
METHOD OF REMOVING WATER FROM GLYCOL SOLUTIONS

Laurence S. Reid, 601 Broad La., Norman, Okla. 73069

Continuation-in-part of Ser. No. 663,085, Mar. 2, 1976, abandoned, and Ser. No. 663,086, Mar. 2, 1976. This application May 30, 1978, Ser. No. 910,476

Int. Cl.³ C07C *29/26*

U.S. Cl. 203—18 **17 Claims**



1. A method of removing water from a mixture of water and a glycol selected from the group consisting of triethylene glycol, tetraethylene glycol and mixtures thereof comprising:

introducing a feed mixture of glycol and water to a mass transfer means for intimately contacting a gas and a liquid to effect mass transfer between said gas and said liquid:

collecting a first concentrated glycol-water liquid from said mass transfer means:

feeding said first concentrated glycol-water liquid to a water exhauster, said feed being at conditions such that an equilibrium vapor of said first concentrated liquid has a glycol/water weight ratio of at least 0.54:

vaporizing a portion of said first concentrated glycol-water liquid to form a recycle vapor and a second concentrated glycol-water liquid:

intimately contacting said recycle vapor with said feed mixture of glycol and water to cause mass transfer of glycol from said vapor to said feed mixture and to cause mass transfer of water from said feed mixture to said vapor:

vaporizing a portion of said second concentrated glycol-water liquid to form a third concentrated glycol-water liquid and an equilibrium vapor in contact with said third concentrated liquid:

condensing a portion of said equilibrium vapor to form a condensate and to allow for further vaporization of said third concentrated liquid, thereby increasing the glycol percentage of said third concentrated liquid; and

removing at least a substantial portion of said condensate from further contact with uncondensed equilibrium vapor.

4,332,644

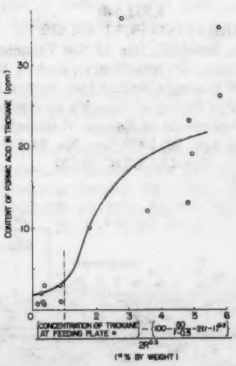
PROCESS FOR SEPARATING TRIOXANE

Katsuhiko Hamanaka; Toshiyuki Iwaisako; Junzo Masamoto, and Koichi Yoshida, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 8, 1981, Ser. No. 271,250

Int. Cl.³ B01D *3/34, 11/04*

U.S. Cl. 203—46 **4 Claims**



1. In a process for separating trioxane by a continuous distillation comprising extracting, with benzene, the trioxane-containing distillate obtainable by heating an aqueous solution of formaldehyde, feeding the trioxane-containing benzene solution into a distillation column as a starting material, distilling out the benzene from the column top and withdrawing the trioxane from the column bottom, a process for separating trioxane which comprises retaining the trioxane concentration X in the liquid composition at the starting material feeding plate of the distillation column (% by weight of trioxane based on the total liquid composition at said feeding plate) in the range satisfying the following relationship:

$$100 - \frac{50}{(\gamma - 0.5)} - 2(\gamma - 1)^{0.2} \leqq X \qquad (1)$$

-continued

$$\leqq 100 - \frac{50}{(\gamma - 0.5)} - 2(\gamma - 1)^{0.2} + 2R^{0.5}$$

wherein R is reflux ratio, and γ is a parameter defined by the following equation:

$$\gamma = \frac{R(1 - C/100) + q}{R(1 - C/100) - C/100 + q} \quad (2)$$

wherein q is the proportion of the liquid part in the fed starting material expressed in terms of ratio by weight, and C (%) is the concentration of trioxane in the fed starting material.

4,332,645

PROCESS FOR THE SEPARATION OF METHANOL FROM MIXTURES OF TETRAHYDROFURAN WITH METHANOL AND WATER

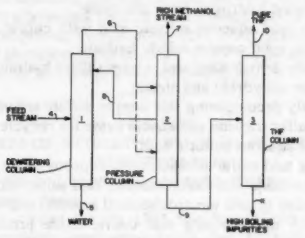
Wolfgang H. E. Müller, and Michael Zölffel, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 167,443

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927931

Int. Cl.³ B01D *3/00;* **C07D** *307/00*

U.S. Cl. 203—75 **9 Claims**



1. A process for the continuous separation of methanol from a feed mixture containing tetrahydrofuran, water and methanol in a rectifying apparatus having at least two rectifying columns, of which two are operated at different pressures, which comprises introducing the feed mixture into a first rectifying column operated under a lower pressure than a second rectifying column, feeding distillate containing a water/tetrahydrofuran azeotrope from the first column into the second column, withdrawing a product stream rich in water from the second column operated at a higher pressure as a side stream and introducing said side product stream into said first column, withdrawing a methanol enriched product stream containing substantially all of the methanol introduced with the feed mixture from the head of the second column and from the apparatus, and withdrawing a sump product containing substantially dry tetrahydrofuran from the second column.

4,332,646

METHOD FOR ASSAYING IRON-EXPOSED PORTION OF COATED STEEL PLATE OR PROCESSED PRODUCT THEREOF

Michiko Tsurumaru, Tokyo; Yukio Suzuki, and Atsushi Nunokawa, both of Kawasaki, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

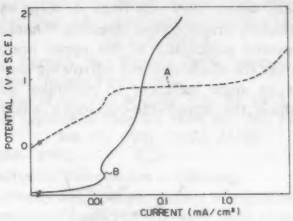
Filed Aug. 18, 1980, Ser. No. 179,152

Claims priority, application Japan, Aug. 20, 1979, 54-105081

Int. Cl.³ G01N *27/00, 27/26*

U.S. Cl. 204—1 T **3 Claims**

1. A method for assaying an exposed iron portion of a tin-plated steel plate or a processed product thereof, which comprises bringing a surface, to be measured, of the tin-plated steel plate or processed product thereof, a reference electrode and a counter electrode into contact with a buffer solution having a pH value of from 9.0 to 11.0, effecting in this state electrolysis between the counter electrode and the tin-plated steel plate or processed product thereof as anode under such conditions that



the voltage of the tin-plated steel plate or processed product thereof to the reference electrode is 0.8 to 1.5 volts calculated as a saturated calomel electrode, and evaluating the exposed iron portion by measuring an electric current flowing between the counter electrode and the tin-plated steel plate or processed product thereof or by observing precipitation and deposition of an oxide or hydrated oxide of iron.

4,332,647

COMPOSITION AND METHOD FOR ELECTRODEPOSITION OF BLACK NICKEL

Stephen K. Woodard, Loveland, Ohio, assignor to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Oct. 17, 1980, Ser. No. 197,873

Int. Cl.³ C25D *3/12*

U.S. Cl. 204—49 **16 Claims**

1. A bath for electrodepositing a substantially black nickel deposit on a substrate comprising an aqueous solution having a pH of about 4 to about 12 and containing about 2 to about 25 g/l nickel ions, at least about 7 g/l borate ions, at least about 10 g/l of bath soluble and compatible inert conductivity salts and a bath soluble amine present in an amount to provide a mol ratio of nickel to amine in the solution of about 1:1 to about 1:4, said amine corresponding to the formula:

$$R—NH—[(CH_2)_n—NH]_m—(CH_2)_p—X—R'$$

Wherein:

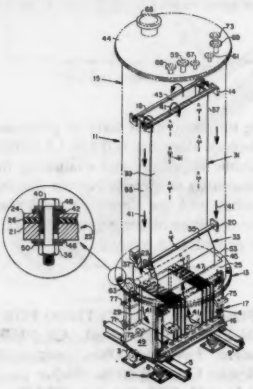
n, m and p are integers and n is 2 or 3, m is 1 or 2 or 3, and p is 2 or 3;

X is O or NH; and

R and R' are the same or different and are H, $—CH_2CH{=}CH_2$, $—CH_2CH_2CH_2SO_3$ or

$$—CH_2CHCH_2OH$$
$$\quad\quad\quad

stantially cylindrically shaped upper housing section and a substantially rectangular shaped lower housing section, said upper housing superimposed over the lower housing section; electrodes comprising a plurality of upwardly, parallelly, alternating anodes and cathodes mounted to the side walls of the lower housing such that the products of electrolysis at the anodes and cathodes are in contact in the electrolyte between the electrodes where they can react to form hypohalite; a singular upwardly oriented flow directing funneling chimney structure located principally in the upper housing section extending over the electrodes and narrowing down to a passageway at an angle sufficient to maximize gas lift flow through which the hypohalite-containing electrolyte rises



from the lifting power of hydrogen generated from between pairs of the electrodes during electrolysis, said electrolyte being mixed in the passageway, the upper housing having means for removing at least a portion of the hydrogen exiting from the passageway, said upper and lower housing sections including internal voids or clearances at housing ends and between the passageway and housing walls adapted so that electrolyte spilling over the top of the passageway moves downwardly through said voids or clearances in a direction parallel to the longitudinal axis of the cell and then moving transversally at the bottom of the cell for recirculation upwardly through the electrodes and chimney structure, said apparatus including means for feeding electrolyte thereto and halate removal therefrom.

4,332,649

METHOD OF POLISHING GLASS WARE WITH SULFURIC ACID AND HYDROFLUORIC ACID

Erich Sälzle, Nadistrasse 8, 8000 Müchen 40, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,452

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949383

Int. Cl.³ C25B *1/16*

U.S. Cl. 204—98 **20 Claims**

1. A method of polishing glass articles comprising contacting said articles with a polishing bath containing sulfuric acid and hydrofluoric acid and subsequently rinsing the finally polished articles in a sulfuric acid washing bath and/or water washing bath, wherein during the polishing operation dissolved alkali metal ions selected from the group consisting of sodium and potassium are removed from the polishing bath.

4,332,650

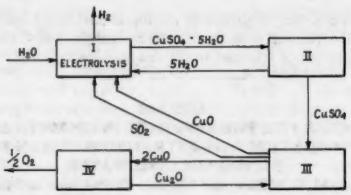
THERMOELECTROCHEMICAL PROCESS USING COPPER OXIDE FOR PRODUCING HYDROGEN AND OXYGEN FROM WATER

Stephen E. Foh, Chicago; Mono M. Mazumder, Westmont, and Jon B. Pangborn, Lisle, all of Ill., assignors to Gas Research Institute, Chicago, Ill.

Filed Jan. 21, 1981, Ser. No. 226,749

Int. Cl.³ C25B *1/04, 1/22*

U.S. Cl. 204—104 **36 Claims**



1. A process for the production of hydrogen and oxygen from water comprising the steps:

electrolytically reacting in an electrochemical reactor an aqueous solution of sulfur dioxide to produce aqueous sulfuric acid in the anode chamber while producing hydrogen in a separated cathode chamber and removing said produced hydrogen from the cycle;

reacting said aqueous sulfuric acid with cupric oxide producing solid copper sulfate hydrate;

thermally dehydrating said copper sulfate hydrate to copper sulfate anhydride and steam;

thermally decomposing said copper sulfate anhydride forming sulfur trioxide and cupric oxide for recycle with additional aqueous sulfuric acid;

reacting said sulfur trioxide with cuprous oxide producing cupric oxide and sulfur dioxide, said sulfur dioxide being recycled to said electrochemical reactor; and

thermally decomposing said cupric oxide produced from said reaction of sulfur trioxide with cuprous oxide to cuprous oxide and to oxygen and removing said oxygen from the cycle.

4,332,651

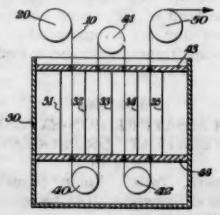
AC ETCHING OF ALUMINUM CAPACITOR FOIL

Richard A. Bemis, Clarksburg, Mass.; Clinton E. Hutchins, Pownal, Vt.; Edward J. Markland, North Adams, and Mulk R. Arora, Williamstown, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed May 20, 1981, Ser. No. 265,296

Int. Cl.³ C25F *3/04, 3/14*

U.S. Cl. 204—129.9 **8 Claims**



1. A process for the AC electrolytic etching of aluminum capacitor foil comprising passing the foil between electrodes supplied with alternating current at a frequency of 15 to 36 Hz in a bath containing 0.5 to 1.8 M hydrochloric acid, 0.05 to 0.3

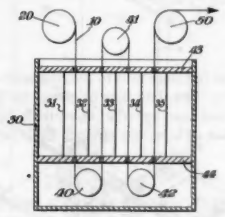
M phosphoric acid, 0.2 to 0.5 M aluminum chloride, and 0.09–1.0 M alkali or alkaline earth metal chloride at a temperature of 30° to 45° C.

4,332,652

AC ETCHING OF ALUMINUM CAPACITOR FOIL

Mulk R. Arora, Williamstown; Edward J. Paquette, Adams, and Allan B. McPherson, Clarksburg, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 210,940, Nov. 28, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 280,659
Int. Cl.³ C25F 3/04
U.S. Cl. 204—129.75 5 Claims



1. A process for AC electrolytic etching of aluminum capacitor foil comprising passing the foil between electrodes supplied with alternating current at a frequency of 12 to 30 Hz in a bath comprising hydrochloric acid, nitric acid, phosphoric acid, and aluminum chloride at 28° to 45° C., the molar ratio of said nitric to said phosphoric acid being 0.3–5.

4,332,653

METHOD OF NITRIDING BY HIGH TEMPERATURE ELECTROLYSIS

Shinzoh Satoh, 2-21-15, Higashimachi, Kichijoji, Musashinoshi, Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,671
Claims priority, application Japan, Jun. 13, 1980, 55-79971
Int. Cl.³ C25D 11/00
U.S. Cl. 204—140 8 Claims

1. A method for nitriding a metallic workpiece by high temperature electrolysis in an electrolyte cell containing a cathode, a molten electrolyte bath having a cyanide as its essential ingredient and wherein said metallic workpiece acts as the anode comprising

dispersing metallic titanium, zirconium or a combination thereof in the molten cyanide bath in a catalytic amount, whereby low grade oxides of said metallic titanium, zirconium or a combination thereof form in said molten cyanide bath in an amount effective to accelerate the nitriding reaction, wherein said metallic titanium, zirconium or a combination thereof is obtained by electrolyzing an aqueous solution of a compound of said titanium, zirconium or a combination thereof;

dipping said metallic workpiece into said molten cyanide bath containing said titanium, zirconium, or combination thereof at a temperature of about 760° to 850° C. and

conducting a direct current of about 10 to 100 A/dm.² through said bath.

4,332,654

PHOTOACTIVATED CATALYTIC HYDROSILYLATION OF CARBONYL COMPOUNDS

Ronald L. Yates, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 17, 1981, Ser. No. 284,034
Int. Cl.³ C07F 7/18
U.S. Cl. 204—158 R 25 Claims

1. A process comprising contacting a carbonyl compound with an organosilicon hydride under reaction conditions to form a silyl ether in the presence of a catalytic amount of at least one photoactivated species of a transition metal carbonyl coordination compound precursor.

4,332,655

ADHESIVE COMPOSITIONS COMPRISING ETHYLENE/POLAR MONOMER COPOLYMER AND AN ELASTOMER

Anthony J. Berejka, San Ramon, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 568,207, Apr. 15, 1975, abandoned. This application May 22, 1980, Ser. No. 152,433
Int. Cl.³ C08L 23/16, 23/08
U.S. Cl. 204—159.2 27 Claims

1. An adhesive composition comprising

(a) a normally adhesive copolymer of ethylene and at least one monoolefinically unsaturated polar comonomer, said copolymer containing at least about 50% by weight of combined ethylene, and

(b) an ethylene-propylene elastomer which

(i) has a substantially or fully saturated backbone;

(ii) has a Mooney viscosity at 250° F. of less than about 70;

(iii) contains less than about 55% by weight of combined ethylene; and

(iv) is present in amount 15 to 50 parts by weight per 100 parts by weight of the elastomer and the normally adhesive copolymer together.

4,332,656

POLYIMIDE FOAMS

John Gagliani; Raymond Lee, and Usman A. K. Sorathia, all of San Diego, Calif., assignors to International Harvester Company, Chicago, Ill.

Filed Apr. 10, 1981, Ser. No. 252,902
Int. Cl.³ C08F 8/00
U.S. Cl. 204—159.14 13 Claims

1. A method of preparing a flexible, resilient polyimide foam with improved compression set properties which comprises the step of foaming and curing a precursor containing at least one alkyl ester of 3,3′,4,4′-benzophenonetetracarboxylic acid; a meta- or para-substituted aromatic diamine which is free of aliphatic moieties; and a heterocyclic diamine, said ester(s) and said diamines being present in concentrations such that the imide forming functionalities are substantially equimolar and the molar ratio of heterocyclic diamine to tetracarboxylic acid diester(s) is in the range of about 0.4–0.42 to 1.0.

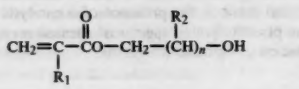
4,332,657

EMULSION COMPOSITION FOR USE IN BAKING PAINT

Keizo Makuuchi, Sakai; Akio Katakai, Takasaki; Miyuki Hagiwara, Maebashi; Tsutomu Yamamoto, Kamakura; Hiroyuki Nakayama, Ninomiya, and Tohru Takagi, Takasaki, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo and Japan Atomic Energy Research Institute, Tokyo, both of, Japan

Filed Nov. 16, 1979, Ser. No. 94,882
Claims priority, application Japan, Dec. 1, 1978, 53/148893
Int. Cl.³ C08F 2/46, 2/54; C08L 33/08, 33/10
U.S. Cl. 204—159.22 6 Claims

1. An aqueous polymer emulsion for use in a baking paint prepared by a process consisting essentially of dispersing a monomer mixture of (A) 2 to 40% by weight of at least one acrylamide selected from the group consisting of N-methylolacrylamide and N-alkoxymethylacrylamide; (B) 1 to 25% by weight of one or more radical polymerizable ethylenic unsaturated monomers having a hydroxyl group having the formula



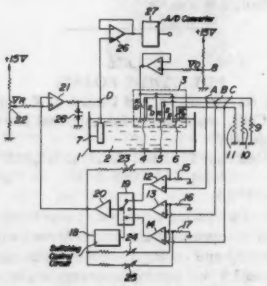
wherein R_1 is H or CH_3, R_2 is H or CH_3, and n is from 1 to 15; or CH_2=CH—CH_2—OH; and (C) 35 to 97% by weight of one or more radical polymerizable ethylenic unsaturated monomers selected from the group consisting of styrene, styrene derivatives, (meth)acrylic acid, (meth)acrylates, acrylonitrile, methacrylonitrile, butadiene, vinyl esters, 1,6-hexanediol di(-meth)acrylate and divinyl benzene, the percentages of (A)+(B)+(C) being 100, in water in the presence of surfactant to form an emulsion and irradiating the emulsion with ionizing radiation.

4,332,658

CHEMICAL SUBSTANCE DETECTION APPARATUS

Kosaku Tsuboshima, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Aug. 28, 1980, Ser. No. 184,058
Claims priority, application Japan, Sep. 10, 1979, 54-115104
Int. Cl.³ G01N *27/26, 27/30*
U.S. Cl. 204—195 M **6 Claims**



5. A chemical substance detection apparatus comprising:

at least one chemically sensitive element which comprises an insulation gate field effect transistor formed on a substrate and having means for chemical sensitivity to different specified substances and adapted to detect specified substances;

a reference electrode;

means forming reference resistance connected to the source of said at least one chemically sensitive element;

at least one first amplifier connected to said reference resistance means and supplied with the voltage produced therefrom, said at least one first amplifier being operative to adjust gain thereof;

a differential amplifier connected to said at least one first amplifier and having two input terminals one of which is applied with the output voltage of said at least one first amplifier, said differential amplifier applying its output voltage to said reference electrode; and

a reference gate bias voltage source connected to the other input terminal of said differential amplifier and supplying the reference gate bias voltage thereto;

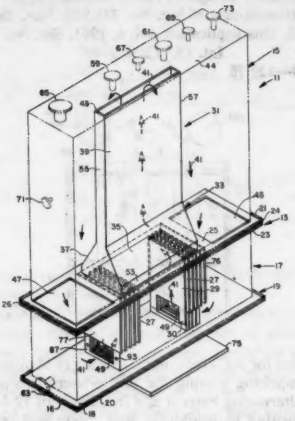
whereby said bias voltage applied to said reference electrode is selectively controlled such that during operation a given electric current substantially always flows the drain-source path of said at least one chemically sensitive element to thereby selectively detect at least one specified substance on the basis of said bias voltage value.

4,332,659

ELECTROLYTIC APPARATUS FOR THE MANUFACTURE OF ALKALI METAL HALATE

Everette M. Spore, Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,231
Int. Cl.³ C25B *15/08, 9/00, 11/02*
U.S. Cl. 204—237 **15 Claims**



1. An electrolytic apparatus for the production of alkali metal halate from an alkali metal halide electrolyte, which comprises a cell housing, a plurality of upwardly and parallelly oriented anodes and cathodes in alternating relationship mounted to said housing such that the products of electrolysis at the anodes and cathodes are in contact in the electrolyte and between the electrodes where they can react to form hypohalite, a singular upwardly oriented flow directing funneling chimney structure in such housing the lower section of the chimney structure extending over the electrodes and narrowing to a passageway through which the hypohalite-containing electrolyte rises due to the lifting power of hydrogen generated between pairs of such electrodes during electrolysis, and in which passageway the hypohalite-containing electrolyte and hydrogen mixes, means for removing from the interior of the housing at the top thereof at least a portion of the hydrogen generated and passed through the passageway, said cell housing including internal voids or clearances at housing ends and between the passageway and housing walls adapted so that electrolyte spilling over the top of the passageway moves downwardly through said voids or clearances in a direction parallel to the longitudinal axis of the cell and then moving transversally at the bottom of the cell for recirculation upwardly through the electrodes and chimney structure.

4,332,660

STORAGE BUNKER DEVICE FOR FEEDING ELECTROLYTIC CELL

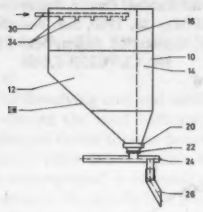
Hans Friedli, Steg, and Erwin Arnold, Venthome, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 5, 1980, Ser. No. 184,344
Claims priority, application Switzerland, Sep. 10, 1979, 8147/79
Int. Cl.³ C25C *3/14*
U.S. Cl. 204—245 **8 Claims**

1. A device for feeding alumina and additives to an electrolytic cell comprising:

a storage bunker having a material inlet and a material outlet, said storage bunker having a first compartment for at least said alumina, a second compartment for at least said

additives and dividing means movable in the vertical direction for dividing said first compartment from said second compartment;



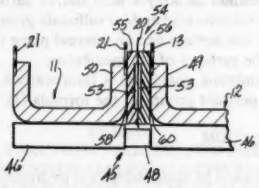
an outlet pipe downstream of said material outlet for feeding alumina and additives to said cell; and

a dosing device positioned between said material outlet and said outlet pipe for feeding material to said outlet pipe.

4,332,661
CELLS HAVING GASKET LUBRICATING MEANS

James M. Ford, Cleveland, and John O. Adams, Madisonville, both of Tenn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 204,127, Nov. 5, 1980. This application Jan. 2, 1981, Ser. No. 222,116
Int. Cl.³ C25B *13/02, 13/04, 9/00*
U.S. Cl. 204—253 **17 Claims**



1. In an electrolytic cell having a plurality of adjacently positioned electrodes in which electrolyte fluid is contained comprising at least:

(a) a first frame member having a first generally planar side and an opposing second generally planar side to which are respectively connected a first generally planar electrode face and a second generally planar electrode face, at least the opposing second side defining a first plane;

(b) a second frame member having a first generally planar side and an opposing second generally planar side to which are respectively connected a third generally planar electrode face and a fourth generally planar electrode face, at least the first side defining a second plane adjacent the first plane and being generally parallel thereto;

(c) separator means for separating the first frame member from the second frame member having a first surface adjacent the second electrode face and an opposing second surface adjacent the third electrode face;

(d) first sealing means contacting the second side of the first frame member and adjacent the first surface of the separator means, the first sealing means having a first contactable surface of a first predetermined surface area adjacent the separator means;

(e) second sealing means contacting the first side of the second frame member and adjacent the second surface of the separator means having a first contactable surface with a first predetermined surface area adjacent the first side of the second frame member and a second contactable surface with a second predetermined surface area adjacent the separator means;

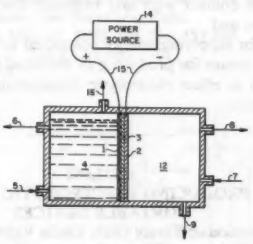
(f) clamping means for pressing the frames together against the sealing means and the separator means to form a substantially fluid-tight seal between the frame members and the first sealing means and the second sealing means; the improvement comprising

(g) lubricous means having a first side and an opposing second side insertable between at least the first sealing means and the first surface of the separator means so that when the clamping means press the frame members together at least the first sealing means can deform outwardly and slidably against the first side of the lubricous means while the opposing second side and the first surface of the separator means remain substantially fixed in place preventing undesired slipping or tearing of the separator means.

4,332,662
ELECTROLYTIC CELL HAVING A DEPOLARIZED CATHODE

Dirk Pouli, Williamsville; Leo S. Melnicki, Niagara Falls, both of N.Y., and Eric J. Rudd, Painesville, Ohio, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,422
Int. Cl.³ C25B *9/00, 11/03, 13/06, 13/08*
U.S. Cl. 204—265 **10 Claims**



1. An electrolytic cell for the electrolysis of an aqueous solution of an alkali metal halide comprising, in combination, an anolyte compartment for retaining an alkali metal halide solution and halogen collection, an oxidizing gas compartment consisting essentially of an enclosed space having means for introducing and withdrawing an oxidizing gas and outlet means for removing liquid alkali metal hydroxide product, and an electrode assembly disposed within said cell between said anolyte compartment and said oxidizing gas compartment, said electrode assembly comprising an anode, a gas permeable porous cathode for the diffusion of the oxidizing gas into said cathode, and a cell separator disposed between and in contact with both the cathode and anode, said cathode having a multiplicity of interconnecting openings permitting the passage of liquid alkali metal hydroxide product through the cathode into the oxidizing gas compartment.

4,332,663
DEHUMIDIFYING DEVICE

Erik S. Berneke, Copenhagen, Denmark, assignor to V. Kann Rasmussen Holding A/S, Denmark

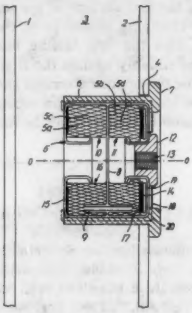
Filed Aug. 20, 1980, Ser. No. 179,755
Claims priority, application Denmark, Sep. 17, 1979, 3873/79
Int. Cl.³ C25B *9/00, 1/04*
U.S. Cl. 204—277 **26 Claims**

1. A dehumidification device for dehumidifying the enclosed interior cavity defined between the glass panes of a multiple glazed window, said dehumidification device comprising:

a dehumidification cell mounted in a pane of a multiple glazed window and having a first part in communication

with the interior cavity defined between the panes, a second part in communication with the surrounding atmosphere, and a passageway means communicating between said first and second parts to permit air flow therethrough;

a moisture absorbing electrolyte means contained within said cell for absorbing moisture from air passing from the cavity to the surrounding atmosphere and from air passing from the surrounding atmosphere into the cavity;



spaced electrode means within said dehumidification cell and in contact with said moisture absorbing electrolyte means; and

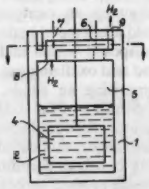
means for supplying energy connected to said spaced electrode means for producing an electrical potential therebetween to effect electrolytic dissociation of the absorbed moisture.

4,332,664

GAS PRODUCING ELECTROLYTIC CELL FOR PORTABLE DEVICES

Zoltan Noszticzius; Karoly Olah; Zsofia Vajta; György Palmai; Gabor Patonay, and Ferenc Szommer, all of Budapest, Hungary, assignors to Csepel Muvek Hiradastechnikai Gepgyara, Budapest, Hungary

Filed Sep. 9, 1980, Ser. No. 185,407
Int. Cl.[3] C25B *9/00, 15/08*
U.S. Cl. 204—266 **8 Claims**



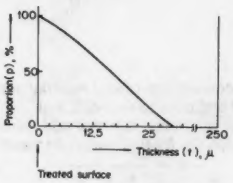
1. A portable gas producing electrolytic cell, comprising a vessel adapted to contain an electrolyte and having a closed bottom and an open top, a wall dividing the interior of the vessel into anode and cathode chambers that communicate with each other below the surface of the electrolyte, a cap covering the open top of the vessel and substantially hermetically separatting the upper portions of the anode and cathode chambers from each other, gas passageways in said cap for each of said anode and cathode chambers, said passage for the cathode chamber extending over the anode chamber and said passage for the anode chamber extending over the cathode chamber, whereby when the cell is overturned on its side so that either the anode chamber is lowermost or the cathode chamber is lowermost, electrolyte cannot escape from the cell.

4,332,665

FLUORINATED CATION EXCHANGE MEMBRANE

Kyoji Kimoto, Yokohama; Hirotsugu Miyauchi, Ota; Jukichi Ohmura, Yokohama; Mikio Ebisawa, Hiratsuka, and Toshioki Hane, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 23, 1980, Ser. No. 152,780
Claims priority, application Japan, May 31, 1979, 54-67887
Int. Cl.[3] C25B *13/08*
U.S. Cl. 204—296 **4 Claims**



1. A fluorinated cation exchange membrane comprising a fluorocarbon polymer containing pendant carboxylic acid and/or carboxylate groups and pendant sulfonic acid and/or sulfonate groups, the proportion of the density of pendant carboxylic acid and/or carboxylate groups relative to the total density of pendant carboxylic acid and/or carboxylate groups and pendant sulfonic acid and/or sulfonate groups being different between one surface and an internal plane in cross-section parallel to the surfaces of the membrane;

which membrane comprises a fluorocarbon polymer containing pendant groups of the formula (1):

$$-OCF_2COOM \quad (1)$$

wherein each M independently is hydrogen, ammonium, a quaternary ammonium or a metal atom,

and pendant groups of the formula (2):

$$-OCF_2CF_2SO_3M \quad (2)$$

wherein each M independently is as defined above, and wherein the proportion (p) represented by the equation (a):

$$p = \frac{A}{A+B} \times 100\ (\%) \quad (a)$$

wherein A is a density of pendant groups of the formula (1) and B is the density of pendant groups of the formula (2), is at least 20% in one surface of the membrane, and said proportion (p) gradually decreases from the one surface to the other surface or to that plane within the membrane where A reaches zero, said proportion (p) and a thickness (t) in microns between the one surface and the other surface or a plane within the membrane in cross-section parallel to the surfaces of the membrane satisfying the following inequality (b):

$$\left|\frac{\Delta p}{\Delta t}\right| \leqq 12\ (\%/\mu). \quad (b)$$

4,332,666

COAL LIQUEFACTION PROCESS WHEREIN JET FUEL, DIESEL FUEL AND/OR ASTM NO. 2 FUEL OIL IS RECOVERED

Richard F. Bauman, Houston, and Daniel F. Ryan, Friendswood, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 6, 1980, Ser. No. 147,428
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—8 LE **4 Claims**

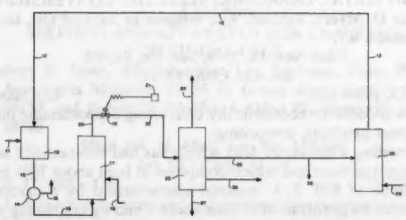
1. In a process for liquefying coal and similar solid carbonaceous materials wherein the solid carbonaceous material is slurried with a hydrogen donor solvent derived from the solid carbonaceous material subjected to liquefaction and wherein the liquefaction is accomplished at elevated temperatures and pressures and a portion of the liquefaction product said portion having an initial boiling point within the range from about 350° F. to about 450° F. and a final boiling point within the range from about 650° F. and to about 950° F. separated, subjected to hydrogenation and used as the hydrogen donor solvent, the improvement wherein the conditions of hydrogenation are controlled such that the yield of napthenic components is from about 5 to about 30 weight percent greater than the concentration of napthenic components in the unhydrogenated fraction and the napthenic components of the fraction subjected to hydrogenation and used as the hydrogen donor solvent are separated and used as a jet fuel, a diesel fuel or an ASTM No. 2 fuel oil or as components therein.

4,332,667

LIQUEFACTION PROCESS FOR SOLID CARBONACEOUS MATERIALS CONTAINING ALKALINE EARTH METAL HUMATES

William R. Epperly, Summit; Barry C. Deane, East Brunswick, both of N.J., and Roy J. Brunson, Buffalo Grove, Ill., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 10, 1978, Ser. No. 922,908
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—8 LE **6 Claims**



1. In a process wherein a lower ranking coal or similar solid carbonaceous material is slurried in a suitable solvent or diluent and liquefied at an elevated temperature and pressure, the improvement comprising subjecting the coal slurry to pressure variation having an amplitude within the range from about 25 to about 500 psi at a frequency within the range from about 0.1 to about 10 cycles per minute during liquefaction.

4,332,668

PRETREATMENT OF SOLID CARBONACEOUS MATERIAL WITH DICARBOXYLIC AROMATIC ACIDS TO PREVENT SCALE FORMATION

Roy J. Brunson, Buffalo Grove, Ill., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 26, 1979, Ser. No. 23,565
Int. Cl.³ C10G *1/04, 1/00*
U.S. Cl. 208—8 LE **8 Claims**

1. A process for the liquefaction of a lower ranking coal comprising the steps of:

(a) contacting said coal with from about 0.3 to about 1.0 lb moles of a pretreating agent selected from the group consisting of phthalic acid, phthalic anhydride, pyromellitic acid and pyromellitic anhydride per 1000 lbs of coal (MAF) so as to reduce the amount of alkaline earth metal humates therein;

(b) liquefying the thus treated coal at liquefaction conditions to produce a petroleum-like product; and

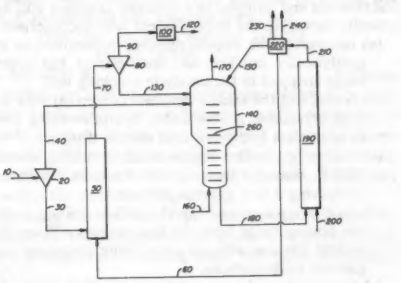
(c) recovering the liquid product from the unliquefied portion of the pretreated coal or similar carbonaceous material.

4,332,669

OIL SHALE RETORTING PROCESS WITH RAW SHALE PREHEAT PRIOR TO PYROLYSIS

Byron G. Spars, Mill Valley; Paul W. Tamm, Oakland, and P. H. Wallman, Berkeley, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed May 27, 1980, Ser. No. 153,509
Int. Cl.³ C10G *1/02*
U.S. Cl. 208—11 R **8 Claims**



1. In an improved process for retorting oil shale wherein spent shale particles at an elevated temperature and raw shale particles are introduced into an upper portion of a vertically elongated retort using a staged turbulent bed; a non-oxidizing fluidization gas is passed upwardly through the retort at a velocity in the range of 30–150 centimeters per second; the size of both said raw shale particles and said spent shale particles is maintained in a range which includes particles which are fluidizable at said gas velocity and particles which are non-fluidizable at said gas velocity; the raw shale particles and the spent shale particles pass downwardly through said retort whereby the raw shale is heated to retorting temperature evolving hydrocarbonaceous vapors; the hydrocarbonaceous vapors are withdrawn from an upper portion of the retort with the fluidization gas; retorted shale particles and spent shale particles are withdrawn from a lower portion of the retort, and are fed to a separate combustion zone with oxygen to burn residual carbon thereon and provide hot spent shale particles, the improvement comprising:

classifying and deaerating the raw shale particles into a first fraction and a second fraction, said first fraction containing substantially only raw shale particles sized above about 30 mesh;

preheating said first fraction to a temperature in the range 150°–370° C. with hot spent shale fines, ranging from about 10–500μ, in a dilute phase lift line;

separating the preheated first fraction from the spent shale fines; and

feeding the preheated first fraction and the second fraction to the retort.

4,332,670

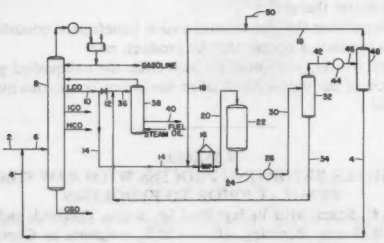
CATALYTIC DEWAXING OF MIDDLE DISTILLATES

Michael J. Antal, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 14, 1981, Ser. No. 224,971

Int. Cl.[3] C10G *45/58, 69/04*

U.S. Cl. 208—68 12 Claims



1. In a process for reducing the pour point of a middle distillate boiling in the range of about 320° to about 800° F. of the type wherein the middle distillate is catalytically cracked, fractionated and stripped in a catalytic cracking unit and catalytically dewaxed, the improvement which comprises:

(a) recovering the middle distillate subsequent to its being catalytically cracked and fractionated but prior to its being stripped in the catalytic cracking unit,

(b) contacting the middle distillate of step (a) with a ZSM-5 type crystalline zeolite under hydrodewaxing conditions to produce a hydrodewaxed middle distillate,

(c) recovering a first liquid distillate boiling above about 320° F. from the hydrodewaxed middle distillate of step (b) leaving a first gaseous effluent,

(d) recovering a second liquid distillate boiling in the gasoline boiling range from the first gaseous effluent leaving a second gaseous effluent comprising hydrogen and light gaseous hydrocarbons,

(e) fractionating the second liquid distillate in the fractionator of the catalytic cracking unit to yield a gasoline product, and

(f) stripping the first liquid distillate in the middle distillate stripper of the catalytic cracking unit to yield a middle distillate product having a reduced pour point.

4,332,671

PROCESSING OF HEAVY HIGH-SULFUR CRUDE OIL

Lyndon D. Boyer, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Jul. 8, 1981, Ser. No. 271,448

Int. Cl.[3] C10G *53/16, 55/08, 57/00*

U.S. Cl. 208—92 6 Claims

1. A process for treating a heavy, high-sulfur crude oil to produce gas and liquid hydrocarbons, delayed petroleum coke and sulfur-enriched residuum comprising:

(a) subjecting said crude oil to distillation whereby gas and liquid hydrocarbon products and a residuum are produced;

(b) subjecting a first portion of said residuum to delayed coking;

(c) calcining the delayed coke to produce sulfur and calcined coke;

(d) recovering sulfur from said calcining step and adding said sulfur to a second portion of said residuum to produce a sulfur-enriched residuum.

4,332,672

PROCESS FOR CONTROLLING SULFUR OXIDES USING AN ALUMINA-IMPREGNATED CATALYST

William A. Blanton, Jr., Woodacre, and Robert L. Flanders, San Anselmo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 751,640, Dec. 17, 1976, Pat. No. 4,115,249, which is a continuation-in-part of Ser. No. 666,115, Mar. 11, 1976, Pat. No. 4,071,436. This application Jul. 10, 1978, Ser. No. 923,428

The portion of the term of this patent subsequent to Jul. 19, 1995, has been disclaimed.

Int. Cl.[3] B01J *29/06;* C01G *11/04;* C01B *17/00*

U.S. Cl. 208—120 3 Claims

1. In a process for cracking hydrocarbons in the absence of added molecular hydrogen wherein a nonzeolitic cracking catalyst including of at least one acidic cracking component from the group consisting of silica-containing nonzeolitic crystalline refractory inorganic oxides and silica-containing amorphous refractory inorganic oxides is cycled between a cracking zone and a catalyst regeneration zone, a sulfur-containing hydrocarbon stream is cracked in contact with said catalyst in said cracking zone, and a sulfur-containing flue gas is formed in said regeneration zone by burning sulfur-containing coke off said nonzeolitic catalyst with an oxygen-containing gas, the method for reducing the amount of carbon monoxide and sulfur oxides in said flue gas which comprises:

(a) heating particles of said nonzeolitic cracking catalyst to a temperature between 800° F. and 1500° F.;

(b) impregnating the resulting nonzeolitic catalyst particles with an amount of an aluminum compound sufficient to add from 0.1 to 25 weight percent aluminum, calculated on an elemental metal basis, to said nonzeolitic catalyst particles;

(c) cycling the resulting impregnated nonzeolitic catalyst particles between said cracking zone and said regeneration zone in said catalytic cracking system;

(d) reacting sulfur oxides in said flue gas with the added aluminum in said catalyst particles to form a sulfur-containing solid in said catalyst particles in said regeneration zone; and

(e) forming hydrogen sulfide in said cracking zone by contacting said hydrocarbon feed with said sulfur-containing solid in said catalyst particles and removing the resulting hydrogen sulfide from said cracking zone with said fluid products.

4,332,673

HIGH METAL CARBO-METALLIC OIL CONVERSION

George D. Myers, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 14, 1979, Ser. No. 94,092

Int. Cl.[3] C10G *11/18*

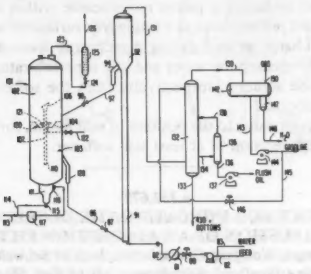
U.S. Cl. 208—120 45 Claims

1. A process for economically converting carbometallic oils to lighter products, comprising:

I. providing a converter feed which has had substantially no hydrotreatment and which comprises at least about 70% by volume of 650° F.+ material characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 5.5 ppm of nickel equivalents of heavy metal(s);

II. bringing said converter feed together with cracking catalyst having an equilibrium MAT conversion activity level of at least about 40 volume percent and bearing an accumulation of at least about 3000 ppm by weight of nickel equivalents of heavy metal(s) expressed as metals on regenerated equilibrium catalyst, and with additional gaseous and/or vaporized material including steam to form a stream comprising a suspension of said catalyst in said feed and gaseous and/or

vaporized material wherein the ratio of the partial pressure of the added gaseous and/or vaporized material relative to the partial pressure of the feed is in the range of about 0.25 to about 4, and causing the resultant stream to flow at a velocity of at least about 25 feet per second through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a vapor residence time in the range of about 0.5 to about 3 seconds at a temperature of about 900 to about 1400° F. and under a total pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 60% to about 90%, while producing coke in amounts in the range of about 6 to about 14% by



weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;

III. separating said catalyst from the resultant cracking products;

IV. stripping hydrocarbons from said separated catalyst;

V. regenerating the metals-bearing, coked catalyst with oxygen-containing combustion-supporting gas under conditions of time, temperature and atmosphere sufficient to reduce the carbon on the catalyst to about 0.25% by weight or less, while forming combustion product gases comprising CO and/or CO_2; and

VI. recycling the regenerated catalyst to the reactor for contact with fresh feed.

4,332,674

METHOD AND APPARATUS FOR CRACKING RESIDUAL OILS

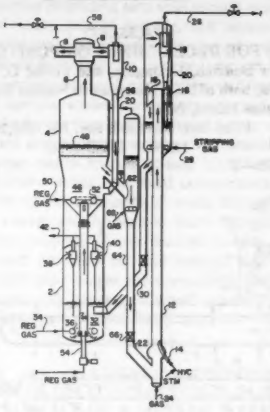
Robert R. Dean, #1 Columbine La., Littleton, Colo. 80123; Jean-Louis Mauleon, 15656 E. Grand Ave., Aurora, Colo. 80112, and Robert W Pfeiffer, 6 Alden Pl., Bronxville, N.Y. 10708

Filed Jul. 15, 1980, Ser. No. 169,086
Int. Cl.[3] C10G *11/16*
U.S. Cl. 208—120 **20 Claims**

1. A method for converting hydrocarbons comprising residual oils which comprises

charging hot particles of catalyst at a temperature above 1400° F. and at least equal to the psuedo-critical temperature of a hydrocarbon feed comprising residual oils to the lower portion of a riser conversion zone for flow upwardly therethrough,

charging the hydrocarbon feed comprising residual oils to said riser conversion zone as a multiplicity of separate streams so as to substantially completely vaporize vaporizable components of the feed whereby thermal and catalytic cracking of the feed is accomplished and



recovering a hydrocarbon product of said thermal and catalytic cracking of the feed separate from catalyst particles.

4,332,675

REMOVAL OF BASIC NITROGEN COMPOUNDS FROM ORGANIC STREAMS

Zeinab Baset, New Providence, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 19, 1980, Ser. No. 218,022
Int. Cl.[3] C10G *21/10*
U.S. Cl. 208—254 R **6 Claims**

1. A method for separating basic nitrogen compounds from an organic feedstream selected from the group consisting of coal liquids, oil-shale liquids, petroleum oils, and coal bottoms which are soluble in common organic solvents at temperatures from about 10° C. to about 25° C., which stream is substantially free of water, the method comprising:

(a) contacting said stream at a temperature from about 10° C. to about 25° C. with gaseous sulfur dioxide thereby effecting a precipitate containing basic nitrogen compounds; and

(b) separating the precipitate from the contact stream.

4,332,676

REMOVAL OF BASIC NITROGEN COMPOUNDS FROM ORGANIC STREAMS

Zeinab Baset, New Providence, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 19, 1980, Ser. No. 218,021
Int. Cl.[3] C10G *21/10*
U.S. Cl. 208—254 R **5 Claims**

1. A method for separating basic nitrogen compounds from an organic feed stream selected from the group consisting of coal liquids, oil-shale liquids, petroleum oils, and coal bottoms which are soluble in common organic solvents at temperatures from about 20° C. to about 100° C., wherein said stream contains at least a stoichiometric amount of water but not so much water that would cause two liquid phases, the method comprising:

(a) contacting said stream, at a temperature from about 20° C. to about 100° C. at about atmospheric pressure, with at least one mol of gaseous sulfur dioxide per mol of basic nitrogen compound in an organic stream, thereby precipitating a salt comprising the basic nitrogen compounds, sulfur dioxide and water; and

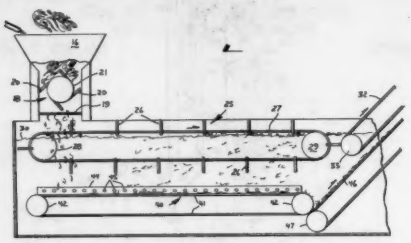
(b) separating the precipitated salt from the contacted stream.

4,332,677

PROCESS FOR RECLAIMING COMPOSITE MATERIALS

Mieczyslaw Budzich, Lexington, and Forest G. Fitz, Jr., West Columbia, both of S.C., assignors to Nassau Recycle Corporation, Staten Island, N.Y.

Filed Oct. 30, 1980, Ser. No. 202,283
Int. Cl.³ B03B *1/02*
U.S. Cl. 209—3 14 Claims



1. A process for reclaiming jelly filled telecommunications cable comprising the steps of:

a. segmenting the cable into jelly bearing segments of insulation covered wires;

b. submerging the segments in a bath of liquid having a specific gravity greater than the jelly but less than the wires;

c. blasting the submerged segments with a gas or vapor heated to a temperature in excess of the melting temperature of the jelly which gas or vapor blasting directly agitates the segments and melts the jelly whereupon jelly is liberated from the segments and rises to the surface of the bath; and

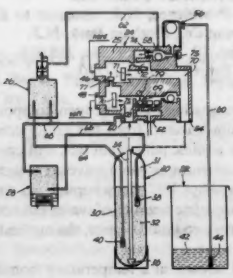
d. skimming the jelly from the bath surface.

4,332,678

SYSTEM FOR THE SOFTENING OF WATER

Karl Spiegl, Landhausstr. 35, 7031 Aidlingen 2, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,501
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 2910869
Int. Cl.³ B01J *47/14*
U.S. Cl. 210—86 23 Claims



1. A system for softening water, said system comprising:

a regeneratable softener having an ion-exchange resin exposable to said water;

means for introducing water to be softened into said softener;

a salt reservoir containing a supersaturated sodium-chloride solution for the regeneration of said resin;

means for transferring supersaturated sodium-chloride solution from the salt reservoir to the softener;

at least one means for removing softened water from said softener and for removing spent regenerant solution from the softener, respectively;

a water hardness detector including a housing containing an ion-exchange shrink resin charge regeneratable by said supersaturated sodium-chloride solution, said shrink resin charge being exposable to water having passed through at least a part of said resin in said softener, and said detector further including a piston reciprocable within said housing, said piston contacts a single free surface of said shrink resin charge at least during detection of water hardness;

means for passing the water and said supersaturated sodium-chloride solution, respectively, from the softener to the detector; and

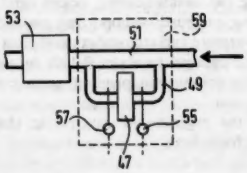
means, responsive to the position of said piston, for initiating the regeneration of at least said softener.

4,332,679

DEVICE FOR INDICATING THE DEGREE OF EXHAUSTION OF AN ADSORPTION FILTER

Bernd Hengst; Wolfgang Grosspietsch, both of Schweinfurt, and Karl-Heinz Ognibeni, Dittelbrunn, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,158
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001675
Int. Cl.³ B01D *15/00, 53/30*
U.S. Cl. 210—90 9 Claims



1. A filtering apparatus for detecting the degree of exhaustion of an adsorption filter comprising mechanical filter means arranged in flow communication with said adsorption filter, pressure sensing means for sensing fluid pressure proximate said mechanical filter means both upstream and downstream thereof, and means for detecting the difference between fluid pressure sensed upstream and downstream of said mechanical filter means to provide an indication of the degree of exhaustion of said adsorption filter based upon said fluid pressure difference, said mechanical filter means being connected in shunt with the flow path of said adsorption filter.

4,332,680

FILTER SLUICING APPARATUS

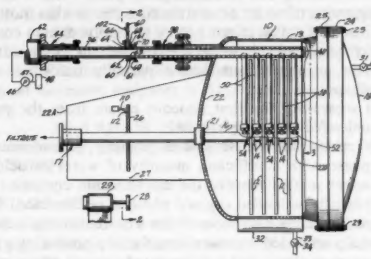
Theodore H. O'Cheskey, Whittier, Calif., assignor to United States Filter Fluid Systems Corporation, Whittier, Calif.

Filed Apr. 14, 1980, Ser. No. 140,298
Int. Cl.³ B01D *33/26*
U.S. Cl. 210—143 12 Claims

1. Filtering apparatus comprising:

at least one filter leaf mounted in the shell to be rotatable in a substantially vertical plane about a substantially horizontal axis;

means for forcing a solids-containing liquid into the shell and into the leaf to form a cake of solids on the leaf;
means for removing filtered liquid from the leaf and the shell;
a movable nozzle in the shell and disposed adjacent the leaf to direct a jet of sluicing liquid against the leaf;
means for rotating the leaf about the axis;
means for supplying a sluicing liquid under pressure through the nozzle to wash solids from the leaf; and



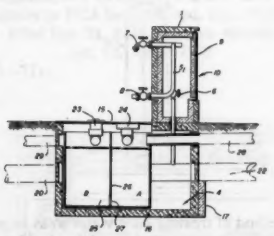
means for moving the nozzle toward and away from the axis of leaf rotation in a plane substantially parallel to the filter leaf to keep the nozzle a substantially constant distance from the leaf as the jet removes solids from the leaf, the jet of sluicing liquid being substantially fan-shaped with the major plane of the fan-shaped jet lying in a plane substantially perpendicular to the plane in which the nozzle moves.

4,332,681

JUNCTION AND CONNECTION TERMINAL FOR THE SERVICE OF FIXED OR MOBILE PREMISES IN PARTICULAR FOR THE SUPPLY OF A SANITARY UNIT WHICH MAY BE ITSELF ATTACHED TO A CARAVAN OR A CAMPING-CAR

Jean-Francois Jambry, 17 Boulevard Raspail, 75007 Paris, and Dusica Milojevic, 93 Boulevard Raspail, 75006 Paris, both of France

Filed Apr. 28, 1980, Ser. No. 144,255
Int. Cl.³ C02C *1/00*
U.S. Cl. 210—170 **15 Claims**



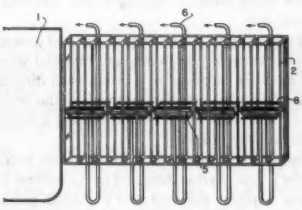
1. A junction and connection terminal for partly embedding in the ground and comprising a case which is of strong material and has an upper part which projects from the surface, the ground and a lower main part which is buried in the ground and has an upper wall substantially flush with the surface of the ground, said upper part defining a first compartment and a second compartment and said lower part defining a third compartment, drinking water piping within said first compartment and leading out of said first compartment for connection to drinking water mains supply, tap means outside said upper part of said case and connected to said piping and supported by said upper part, said tap means including rapid pipe coupling means for connecting said tap means to piping a fixed or mobile sanitary unit for supplying drinking water thereto, electric mains supply cables extending into said second compartment, electric socket means located outside, and mounted on said upper part of said case, for plugging in electric cables of said fixed or mobile sanitary unit, an electric junction box within said second compartment and connecting said mains supply cables to said electric socket means, sewage and household waste liquids discharge pipe means extending out of the interior of said third compartment, sewage and household waste liquids, inlet pipe means extending into said third compartment, means located inside said third compartment and connecting said sewage and household waste liquids inlet pipe means to said sewage and household waste liquids, discharge means and pipe coupling means located outside said third compartment and provided on said sewage and household waste liquids inlet pipe means for connecting said inlet pipe means to sewage and household waste liquids, outlet pipe means of said fixed or mobile sanitary unit.

4,332,682

SYSTEM FOR COLLECTING PRODUCTS DUMPED ON THE SURFACE OF A MASS OF WATER

Francisco-Javier Jauregui Carro, C/Castilla, 14-1° C, Santander, Spain

Filed Aug. 7, 1980, Ser. No. 176,244
Claims priority, application Spain, Aug. 13, 1979, 483.346; Jul. 21, 1980, 493.564
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—242.1 **22 Claims**



1. In a system for collecting products floating on the surface of a body of water, particularly for collecting petroleum products floating on the surface of the sea, said system being of the type including a ship and collecting devices extending from opposite sides of said ship for collecting products from the water surface and for transferring said products to said ship, the improvement wherein each said collecting device comprises:

a cage having a substantially rectangular parallelepided configuration and connected at one end thereof to the respective side of said ship by a freely articulated pivot so that said cage is pivotable in all directions about said pivot with respect to said ship, said cage having a height such that when said ship is at ballast the upper part of said cage will be above the maximum loading line of said ship and the lower part of said cage will be submerged;
a plurality of floating suction pump inlet housings positioned in a longitudinal arrangement within the interior of said cage, each said housing being retained in said cage for substantially independent vertical movement therein to adapt to the water surface and being prevented from movement in other directions relative to said cage;
each said housing having a substantially rectangular parallelepiped configuration including a front face oriented in the direction of travel of said ship;
said front face having therein, throughout substantially the entire width thereof, a longitudinal opening for allowing introduction of products on the water surface into the

interior of said housing upon movement of said ship in said direction, said opening having a lower edge submerged beneath the floating line of said housing; and

means, individually connected to each said housing, for connecting the interiors of said housings to a source of reduced pressure and for transferring products from said interior to said ship.

4,332,683

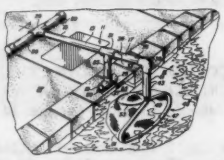
ADJUSTABLE AND STATIONARY HOLDING APPARATUS FOR A SWIMMING POOL SURFACE SKIM NET

William P. Alt, 1331 Stanley St., Longwood, Fla. 32750

Continuation-in-part of Ser. No. 171,883, Jul. 24, 1980, abandoned. This application May 4, 1981, Ser. No. 259,948

Int. Cl.³ B01D *35/28*

U.S. Cl. 210—499 **6 Claims**



1. An apparatus for skimming debris from the surface of a swimming pool comprising:

a hollow main member having a first end and an opposite second end;

at least one support foot member secured to said main member intermediately between said first and second end, said foot member disposed in a downward direction;

a hollow support member secured to the second opposite end of said main member and having a downwardly disposed hollow portion;

a downwardly disposed hollow skim net holding member having a first portion disposed in the hollow portion of the hollow support member and a second portion provided with a plurality of spaced holes;

a skim net pole having a section adapted to fit inside the skim net holding member;

biased projecting means disposed on said section of said skim net pole for engaging one of said plurality of spaced holes on said hollow support member;

a skim net frame secured to said skim net pole;

netting material secured around the periphery of the skim net frame; and

means coupled to the skim net frame for maintaining the netting material in a fully expanded position whereby the position of the skim net frame and netting material can be changed by displacing the skim net pole until the biased projecting means engages a second one of said plurality of holes and twisting said holding member relative to said hollow support member.

4,332,684

PROCESS FOR TREATING AN ORGANIC PHASE CONTAINING IRON CHLORIDE, MOLYBDENUM CHLORIDE AND HCL

Achille De Schepper, Lichtaart, and Marc Coussement, Hove, both of Belgium, assignors to Metallutgie Hoboken-Overpelt, Brussels, Belgium

Filed Jul. 21, 1980, Ser. No. 169,517

Claims priority, application Luxembourg, Aug. 13, 1979, 81600

Int. Cl.³ B01D *11/00*

U.S. Cl. 210—634 **8 Claims**

1. A process for treating a loaded organic phase containing iron chloride, molybdenum chloride and HCl in order to remove iron chloride and molybdenum chloride therefrom, this loaded organic phase having been obtained by extracting trivalent iron and hexavalent molybdenum from an aqueous acid chloride solution with an organic liquid comprising an extracting agent consisting of an organophosphoric compound and an agent to prevent emulsion formation consisting of a long chain aliphatic alcohol, this process being characterized in that it comprises the following sequence of steps:

(a) contacting the loaded organic phase with a sufficient quantity of water or acidulated water so that most of the iron and only a minor part of the molybdenum contained in the organic phase are re-extracted, thereby producing a first aqueous eluate and a partially unloaded organic phase;

(b) separating the first aqueous eluate from the partially unloaded organic phase;

(c) contacting the separated partially unloaded organic phase with a sufficient quantity of water or acidulated water so that most of the molybdenum contained in the partially unloaded organic phase is re-extracted, thereby re-extracting also most of the iron remaining in the partially unloaded organic phase, thereby producing a second aqueous eluate and a regenerated organic phase; and

(d) separating the second aqueous eluate from the regenerated organic phase.

4,332,685

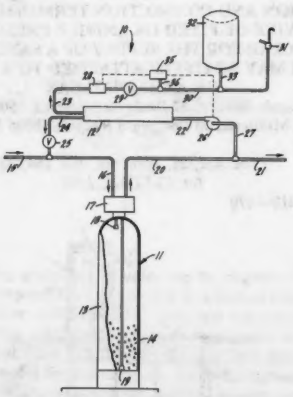
METHOD AND APPARATUS FOR TREATING WATER

Duane D. Nowlin, New Brighton, and Dennis G. Winberg, Cottage Grove, both of Minn., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Jan. 26, 1978, Ser. No. 872,540

Int. Cl.³ B01D *13/00*

U.S. Cl. 210—638 **8 Claims**



1. The method of treating hard water so as to produce a first supply of softened water that is relatively high in dissolved solids and a second supply of potable water that is low in dissolved solids, comprising the steps of:

(a) passing all of the hard water through an ion exchanger so as to produce a supply of soft water relatively high in dissolved solids;

(b) passing some of the soft water that has passed through said ion exchanger through a reverse osmosis material so as to produce a supply of potable water low in dissolved solids and a waste water;

(c) mixing all of said waste water with said hard water so as to dilute said waste water;

(d) passing the mixture of said waste water and said hard water through said ion exchanger; and

(e) storing downstream from said reverse osmosis material a volume of said potable water that is approximately equal to or less than the volume of water that can be stored in said ion exchanger.

4,332,686

LINEAR POLYURETHANE ULTRAFILTER AND PROCESSES FOR USE THEREOF

Klaus Gerlach, Obernau; Joachim Behnke, Amorbach; Wolfgang Rösener, Erlenbach, and Ewald Hohm, Mömlingen, all of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Filed Apr. 30, 1980, Ser. No. 145,767

Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2918027

Int. Cl.³ B01D *13/00, 39/16*

U.S. Cl. 210—651 14 Claims

1. An ultrafiltration membrane consisting essentially of a linear polyurethane, said membrane having a thickness of 0.001 mm to 0.200 mm, hydraulic permeability for pure water of about 50 to 500 $l/m^2 \cdot h$ and a separation factor α of about 2×10^{-3} to 1×10^{-4}, the permeability being based on determination with a membrane of a thickness of about 0.02 mm, a pressure differential of 1 bar and a temperature of 20° C. and the separation factor α being established with the standard 2% oil-and-emulsifier in water emulsion at 25° C., said separation factor being defined as the ratio of the concentrations of oil to water in filtrate from the membrane divided by the ratio of the concentrations of oil to water in feed to the memb. .ne.

12. A process for the separation of an oil-water emulsion comprising passing the emulsion against an ultrafiltration membrane as defined in claim 1 at a pressure differential of at least 1 bar so as to cause the water to permeate the membrane followed by recovering the retentate in the form of oil.

4,332,687

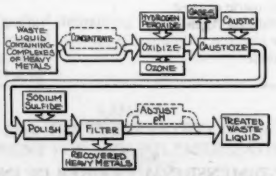
REMOVAL OF COMPLEXED HEAVY METALS FROM WASTE EFFLUENTS

Louis G. Daignault, and Edward E. Schiller, both of Charlotte, N.C., assignors to PCA International, Inc., Matthews, N.C.

Filed Sep. 21, 1978, Ser. No. 944,556

Int. Cl.³ C02F *1/78*

U.S. Cl. 210—721 12 Claims



1. A method of treating a waste solution containing heavy metals tightly bound by one or more complexing agents selected from the group consisting of EDTA, NTA and thiosulfate to facilitate separation and recovery of the heavy metals and to reduce pollution of streams by the heavy metals, said method comprising contacting the waste solution with a synergistic mixture of peroxide and ozone to oxidize and destroy the complexing agents and convert the heavy metals into a readily separable form.

4,332,688

AQUEOUS ACID SOLUTION CONTAINING AN ACRYLAMIDO ALKANESULFONIC ACID POLYMER

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

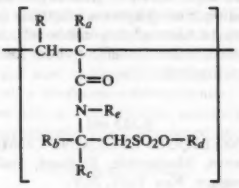
Division of Ser. No. 877,137, Feb. 13, 1978, Pat. No. 4,163,476, which is a continuation-in-part of Ser. No. 753,125, Dec. 22, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 1,797

The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.

Int. Cl.³ E21B *43/27*

U.S. Cl. 252—8.55 C 24 Claims

1. An aqueous solution of about 2 to about 12 percent by weight of a mineral acid selected from the group consisting of hydrochloric acid, sulfuric acid and mixtures thereof and from about 1 to about 7 percent by weight of hydrofluoric acid which contains dissolved therein about 0.5 to about 5 percent by weight based on the total solution weight of an oxyalkylated, acrylamido alkanesulfonic acid polymer comprising recurring units of the formula:



wherein R, R_a, R_b, and R_c are independently selected from the group consisting of hydrogen and alkyl having from 1 to 5 inclusive carbon atoms, R_d is selected from the group consisting of hydrogen and $-(C_2H_4O)_mM$, wherein m is an integer of from 1 to about 20 and M is selected from the group consisting of hydrogen, sodium, potassium and ammonium and R_e is selected from the group consisting of hydrogen and $-(C_2H_4O)_sM$ wherein s is an integer of from 1 to about 20 and with the proviso that when R_d is hydrogen then R_e is $-(C_2H_4O)_sM$ and when R_e is hydrogen, then R_d is $-(C_2H_4O)_mM$, and wherein the average molecular weight of said oxyalkylated, acrylamide alkanesulfonic acid polymer ranges from about 1000 to about 1,000,000.

4,332,689

WATER BASE LUBRICANT COMPOSITION

Yoshiharu Tanizaki, Yokohama; Shigeyuki Takase, Kawasaki; Kenichiro Minagawa, Yokohama, and Kiyomitu Watanabe, Tokyo, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

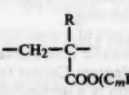
Filed Apr. 1, 1980, Ser. No. 136,578

Claims priority, application Japan, Sep. 28, 1979, 125017

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.3 5 Claims

1. A water-based lubricant comprising a solution of from 20 to 96 parts by weight of water and from 4 to 80 parts by weight of polymer having a number average molecular weight of less than 100,000, said polymer consisting essentially of recurring structural units of the formula



wherein R is H or CH_3, m is an integer of from 2 to 4, and n is an integer of from 2 to 20.

4,332,690

HEAT STORAGE SYSTEM COMPRISING A PHASE CHANGE MEDIUM AND A NUCLEATING AGENT

Hiroshi Kimura, and Junjiro Kai, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1980, Ser. No. 141,314

Claims priority, application Japan, Dec. 4, 1979, 54-158810; Dec. 20, 1979, 54-166342

Int. Cl.[3] C09K *3/18;* F28D *13/00*

U.S. Cl. 252—70 10 Claims

1. In a heat storage system comprising a phase change medium which results in a phase conversion at a specific temperature and a nucleating agent for initiating a crystallization of said phase change medium, an improvement characterized in that a gas and water are present in contact with each other in the system in amount to form as the phase change medium a gas hydrate having a dodecahedron structure as the basic crystal structure and a clathrate for water which has a dodecahedron structure different from that of said gas hydrate is present as said nucleating agent, wherein said gas hydrate is a hydrate of ethyl chloride, trichlorofluoromethane, dichlorofluoromethane, tetrahydrofuran or trimethylamine or a mixture thereof and said nucleating agent is a hydrate of tetrabutylammonium salt or tetraisomylammonium salt, said nucleating agent being present in amount effective for initiating crystallization of the gas hydrate.

4,332,691

BLEACHING LIQUID CLEANING COMPOSITION

Stuart W. Beavan, Merseyside, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,036

Claims priority, application United Kingdom, Apr. 11, 1980, 8012042; Apr. 11, 1980, 8012046; Apr. 11, 1980, 8012047; Apr. 11, 1980, 8012048

Int. Cl.[3] C11D *9/42*

U.S. Cl. 252—96 16 Claims

1. A liquid-based bleaching and cleaning composition consisting essentially of:

(i) at least about 20% by weight of a liquid base,

(ii) about 1% to about 79.9% by weight of a detersive surfactant with or without a detergency builder; and

(iii) about 0.1% to about 40% by weight of a chlorite whereby said

composition yields a pH of at least 6.0 when dispersed in water at a concentration of about 0.5 g/l and provides a bleaching effect when exposed to a source of ultraviolet light.

4,332,692

LAUNDERING WITH A NONIONIC DETERGENT SYSTEM AT A TEMPERATURE BETWEEN THE CLOUD POINT AND THE PHASE COALESCENCE TEMPERATURES

Nicholas S. Payne, Cincinnati, Ohio; Thomas D. Storm, Tucson, Ariz., and Theodore C. Stephens, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 16,048, Feb. 28, 1979, abandoned. This application Jun. 5, 1980, Ser. No. 156,536

Int. Cl.[3] C11D *3/075*

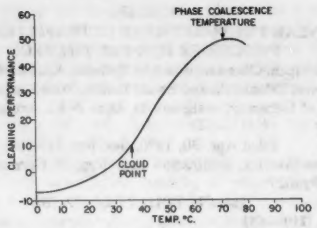
U.S. Cl. 252—135 12 Claims

1. A process for laundering oily soil from a fabric, comprising the step of contacting said fabric with an aqueous washing liquor, having a total surfactant hydrophilic/lipophilic balance index of about 10–13, comprising:

(a) 1800 ppm to 20,000 ppm of a nonionic surfactant system which has a critical micelle concentration of less than 50 ppm measured at 25 degrees Celsius in distilled water;

(b) 500 ppm to 10,000 ppm of a sequestering builder selected from compounds of a group of cations selected from sodium, potassium, lithium and hydrogen ions and a group of anions selected from tripolyphosphate, pyrophosphate, orthophosphate, nitrilotriacetate, ethylene diamine tetraacetate, nitrilotrimethyl phosphate, and ethylene diamine tetramethylphosphonate ions, and mixtures thereof; and

(c) 700 ppm to 20,000 ppm of a strong electrolyte; while maintaining said washing liquor at a temperature within the range given by the expression



$$0.30(B-A)+A \leqq T < B$$

wherein T is the temperature of said washing liquor, B is the phase coalescence temperature of said washing liquor and A is the cloud point temperature of said washing liquor.

4,332,693

AGENT FOR THE PURIFICATION OF WASTE WATERS AND PROCESS FOR ITS PRODUCTION

Ralf F. Piepho, Wennigsen, Fed. Rep. of Germany, assignor to American Colloid Company, Skokie, Ill.

Continuation of Ser. No. 867,240, Jan. 6, 1978, abandoned. This application Mar. 5, 1981, Ser. No. 240,874

Int. Cl.[3] C02F *5/10*

U.S. Cl. 252—181 6 Claims

1. A chemical agent for the treatment of contaminated waste waters, especially of waste waters in the form of oily emulsions, the agent being composed by weight of the following compounds in the following proportions:

Talc	1.5–2.5 kg
Adipic Acid	2.0–3.0 kg
Aluminum Sulfate	17.0–23.0 kg
An acid activated bentonite, comprising approximately 56.7% SiO_2; 20.2% Al_2O_3; 2.9% CaO; 4.3% MgO; and 2.7% $Na_2O + K_2O$	35.0–48.0 kg
A polymeric organic Flocculating Agent	0.3–0.5 kg
Lime	12.0–15.0 kg
Bentonite	20.0–28.0 kg
	87.8–120.0

4,332,694

THREE-DIMENSIONAL CARRIER OF INORGANIC POROUS MATERIAL-REACTIVE POLYMER AND A METHOD FOR ITS PREPARATION

Jaroslav Kalal, and Marie Tlustakova, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 847,259, Oct. 31, 1977, abandoned. This application Nov. 29, 1979, Ser. No. 98,343

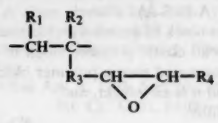
Claims priority, application Czechoslovakia, Nov. 12, 1976, 7319-76; Nov. 12, 1976, 7320-76

Int. Cl.[3] C12N *11/08;* B32B *17/10*

U.S. Cl. 252—189 8 Claims

1. A three dimensional carrier consisting of a porous inor-

ganic material and 0.001–95% unextractably sorbed reactive polymer of the general formula I,



I

wherein R_1, R_2, R_4 respectively are hydrogen, alkyl with 1–5 carbon atoms, or aryl, and R_3 is the group $—COO(CH_2)_n—$, wherein n is 1 or 2, some of the epoxy groups of said polymer having interacted with the surface of said inorganic material, the remaining non-interacted epoxy groups of said polymer representing reactable sites, and said polymer prior to contacting said inorganic material, having a degree of polymerization lower than 10^3.

4,332,695

HYDROCARBON EMULSIONS

Johann G. D. Schulz, Pittsburgh, and John A. Cobler, Harwick, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 9, 1980, Ser. No. 110,796

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—312 **12 Claims**

1. A hydrocarbon emulsion containing hexane, water and the product resulting from the reaction of (1) polycyclic, polycarboxylic acids obtained as a result of the oxidation of coal with (2) a base, wherein the weight ratio of hydrocarbon to water is in the range of about 4:1 to about 1:4 and the weight ratio of said product to water is in the range of about 1:49 to about 1:4.

4,332,696

FATTY EPOXIDE HYDROPHOBIZED SILICA AS ANTIFOAMS IN BROWNSTOCK WASHING AIDS

Manuel Slovinsky, Woodridge, and Joseph A. Maciaszek, Naperville, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed May 27, 1980, Ser. No. 153,512

Int. Cl.³ B01D *19/04*; B05D *3/02, 7/00*

U.S. Cl. 252—321 **5 Claims**

2. In an improved aqueous defoamer composition of the type comprising 70–98% by weight of a water-insoluble organic liquid, from 0.1 to about 20% of a hydrophobic silica suspended in the organic liquid, and from about 1 to about 20% of a oil-soluble spreading agent, the improvement which comprises utilizing as the hydrophobic silica a silica which had at least a portion of its surface esterified with an alpha-beta fatty epoxide.

4. The method of defoaming aqueous systems which comprises adding to said systems a defoaming amount of the composition of claim 2.

4,332,697

PROCESS FOR THE PREPARATION OF CATALYST COMPONENT FOR THE POLYMERIZATION OF α-OLEFINS

Kouhei Kimura, Kanagawa; Hiroyasu Ohba, and Atsushi Murai, both of Chigasaki, all of Japan, assignors to Toho Titanium Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1980, Ser. No. 216,766

Claims priority, application Japan, Dec. 31, 1979, 54-173241

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **10 Claims**

1. A process for the preparation of a catalyst component for the polymerization of α-olefins which comprises copulverizing for treatment (a) a magnesium halide represented by the general formula MgX_2 where X is a halogen atom, with (b) aluminium isopropoxide to form a first copulverization product, subsequently adding (c) an electron donor compound to said first copulverization product for copulverization treatment therewith to form a second solid copulverization product, contacting said second solid copulverization product with (d) a titanium halide represented by the general formula TiX_4 where X is a halogen atom in the liquid phase or in the gaseous phase to be reacted therewith, and washing the resultant reaction product with an inert organic solvent, whereby the catalyst component is obtained.

4,332,698

CATALYST SHEET AND PREPARATION

Philip Bernstein, Glen Ridge, N.J.; James P. Coffey; Alan E. Varker, both of Warwick, N.Y.; John T. Arms, Monroe; William D. K. Clark, Warwick, both of N.Y., and Paul D. Goodell, Ridgewood, N.J., assignors to MPD Technology Corporation, Wyckoff, N.J.

Filed Jan. 19, 1981, Ser. No. 226,457

Int. Cl.³ B01J *31/06, 31/28, 31/34, 35/02*

U.S. Cl. 252—430 **16 Claims**

1. A catalyst composition said composition being in the form of a sheet comprising a catalyst material encradled in a porous, fiber-containing polymeric material, said polymeric material comprising a fibrillated first polymer and a support-contributing polymer, and said polymeric material having porosity therethrough, and said composition being developed from a catalyst material, a fibrillatable first polymer, a support-contributing second polymer and a major amount of a removable pore-former, said porosity being developed on removal of the pore-former.

4,332,699

CATALYST PREPARATION

Richard J. Nozemack, Lutherville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jul. 10, 1980, Ser. No. 167,297

Int. Cl.³ B01J *29/08*

U.S. Cl. 252—455 Z **15 Claims**

1. A method for preparing a zeolite containing hydrocarbon cracking catalyst which is selective for the production of gasoline fractions comprising:

dispersing in an inorganic oxide matrix an alumina coated zeolite which is prepared by the process comprising:

(a) preparing an aqueous slurry of finely divided zeolite,

(b) continuously adding an acid aluminum salt solution and an alkali metal aluminate solution to said zeolite slurry under agitation to provide a reaction mixture wherein the pH remains at about 7 to 8 to precipitate hydrous alumina on said zeolite particles, and

(c) adding a base to the reaction mixture to increase pH to a level of from about 9 to 11 to stabilize said alumina.

3. The method of claim 1 wherein said zeolite is a crystalline alumino silicate selected from the group consisting of type X, type Y, ZSM-5 and mixtures thereof.

6. The method of claim 1 where from about 20 to 50 percent by weight of alumina is precipitated on said zeolite.

4,332,700

METHOD FOR SEPARATING RUBBER FROM METAL

Pavel Munih, Kranj, Yugoslavia, assignor to SAVA KRANJ Industrija gumijevih, usnjenih in kemicnih izdelkov n.o.sol.o., Kranj, Yugoslavia

Filed Oct. 21, 1980, Ser. No. 199,157

Claims priority, application Yugoslavia, Oct. 22, 1979, 2565/79

Int. Cl.³ C08J *3/28, 11/00*

U.S. Cl. 204—155 **8 Claims**

1. A method for separating rubber from metal which comprises covering a disintegrated metal-containing rubber body with an inert powdered agent, exposing said rubber body to high-frequency electromagnetic field for a time sufficient to

cause the metal to glow and the border layer of the rubber on the metal-rubber contact to become thermally degraded and carbonized, cooling until the metal ceases to glow, removing the inert powdered agent, and separating the rubber from the metal by means of magnetic separation.

4,332,701

SPRAYABLE HIGH SOLIDS POLYESTER RESIN COMPOSITIONS

Charles A. Ponyik, Jr., Maple Heights, Ohio, and Michael A. Tobias, Bridgewater, N.J., assignors to Dunlop Limited, London, England

Filed Jun. 18, 1980, Ser. No. 160,536
Int. Cl.³ C09D *3/52, 3/64, 3/66*
U.S. Cl. 524—539 **5 Claims**

1. Polyester resin condensation products of a reaction mixture comprising:
(a) between about 40% and about 60% by weight isophthalic acid;
(b) between about 2% and about 18% by weight of 2-ethyl-2-(hydroxymethyl)-1,3-propanediol;
(c) between about 9% and about 24% by weight of 2,2-dimethyl-1,3-propanediol;
(d) between about 9% and about 30% by weight of 1,6-hexanediol; and
(e) between about 3% and about 15% by weight of benzoic acid; wherein said resin has a number average molecular weight of from about 1400 to about 5000 and a combined acid and hydroxyl value of about 40 to about 160 milligrams of KOH per gram of polyester.

4,332,702

POLYVINYL CHLORIDE COMPOSITIONS AND PROCESSING

Robert A. Lindner, Newburg, N.Y., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Jan. 12, 1981, Ser. No. 223,886
Int. Cl.³ C08K *5/09, 5/10, 5/57*
U.S. Cl. 524—178 **13 Claims**

1. A partial ester of pentaerythritol which is useful for internal lubricating functions and also to function as a hydrogen chloride scavenger in a polyvinyl chloride product such compound is further described as:
a partial ester of 2,2-bishydroxymethyl-1,3-propanediol which contains as the saturated fatty acid portion of said ester the following components:
(a) from 0 to 10 percent of 14 carbon fatty acid;
(b) 0 to 5 percent of 15 carbon fatty acid;
(c) 30 to 60 percent of 16 carbon fatty acid;
(d) 0 to 5 percent of 17 carbon fatty acid; and
(e) 30 to 60 percent 18 carbon fatty acid
reacted to give from 25 to 45 percent monoester, from 40 to 60 percent diester and from about 15 to about 30 percent triester, such that said partial ester is substantially free of unreacted 2,2-bishydroxymethyl-1,3-propanediol and substantially free of the tetraester.

4,332,703

PLASTIC BITUMINOUS COMPOSITIONS

Jan Lijzenga; Gerrit Van Gooswilligen, and Thomas C. Blanken, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 17, 1981, Ser. No. 235,347
Claims priority, application United Kingdom, Mar. 31, 1980, 10836
Int. Cl.³ C08L *9/00, 95/00*
U.S. Cl. 524—68 **10 Claims**

1. Plastic bituminous compositions comprising
(a) 100–30% w of a mixture of
1. 45–99.8% w of a bituminous component having a penetration of less than 800 (0.1 mm) at 25° C.,
2. 0.1–30% w of a lithium salt of a C_{10}–C_{40} (hydroxy) fatty acid, and
3. 0.1–25% w of a thermoplastic polymer having the general configuration $(A\text{-}B(B\text{-}A)_n$ wherein each A is a thermoplastic polymer block of a monovinyl aromatic hydrocarbon, each B is an elastic polymer block of a conjugated diene or hydrogenated elastic polymer block of a conjugated diene and n is an integer, and
(b) 0–70% w of a filler.

4,332,704

MODIFIED ASPHALT COMPOSITIONS

Alfred Marzocchi; Michael G. Roberts; Charles E. Bolen, and Edward R. Harrington, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 12, 1980, Ser. No. 158,966
Int. Cl.³ C08L *91/00*
U.S. Cl. 523—203 **11 Claims**

1. A chemically-modified asphalt composition formed by reaction of (a) an asphalt, (b) a polycarboxylic acid or anhydride containing 2 to 4 carboxyl groups and (c) an organic polyalcohol.

4,332,705

ASPHALT COMPOSITION MODIFIED WITH A RUBBERY POLYMER

William E. Uffner, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 28, 1980, Ser. No. 144,711
Int. Cl.³ C08L *91/00*
U.S. Cl. 523—206 **16 Claims**

1. A chemically-modified asphalt composition comprising an asphalt which has been reacted with (1) a polymerizable monofunctional vinyl aromatic monomer, (2) a polyfunctional polymerizable vinyl aromatic monomer having the formula:

$$CH_2{=}CH{-}R_1{-}(CH_2)_x{-}CH{=}CH_2$$

wherein R_1 is an aromatic group containing 6 to 12 carbon atoms and x is 0 or an integer from 1 to 5 and (3) a rubbery polymer.

4,332,706

INTERNAL REFLECTION SUPPRESSING COATING MATERIAL FOR OPTICAL GLASS

Haruo Uehara, and Kunio Satomi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1980, Ser. No. 149,456
Claims priority, application Japan, May 21, 1979, 54-62427; May 21, 1979, 54-62428
Int. Cl.³ C08L *91/00*
U.S. Cl. 523—450 **10 Claims**

1. An internal reflection suppressing coating material for optical glass which comprises, as an admixture, a light absorbing material, a resin and an organic solvent, said light absorbing material being selected from the group consisting of coal tar and coal tar pitch and being present in an amount of 15 to 70 percent by weight of the coating material excluding the solvent, and said resin being selected from the group consisting of vinylidene chloride copolymers, brominated epoxy resins and chlorinated epoxy resins.

4,332,707

SYNERGISTIC SOLVENT SOLUTION OF XYLENE AND STODDARD SOLVENT FOR CHEMICALLY MODIFIED ASPHALT

Michael G. Roberts, and Joseph F. Tanner, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 1, 1981, Ser. No. 249,592
Int. Cl.³ C08L 95/00
U.S. Cl. 524—476 4 Claims

1. A homogeneous, stable organic solvent solution of the reaction product of asphalt, a polymerizable vinyl aromatic monomer, and a rubbery polymer, said solvent being selected from the group consisting of (a) a mixture consisting essentially of about 40–80% by weight xylene and about 20–60% by weight Stoddard solvent, and (b) a mixture consisting essentially of xylene, Stoddard solvent and hexane or heptane, or a mixture of hexane and heptane, with xylene being present in an amount of about 40–80%, the Stoddard solvent being present in an amount of about 5–35%, and said hexane or heptane, or mixture of hexane and heptane, being present in a maximum amount of about 25%.

4,332,708

POLYCARBOXYLIC ACID/ESTER-DIAMINE AQUEOUS COATING COMPOSITION

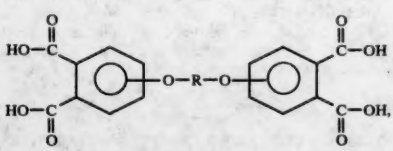
Edith M. Boldebuck, Schenectady, N.Y., and Eugene G. Banucci, Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 27, 1980, Ser. No. 124,986
Int. Cl.³ C08L 79/08
U.S. Cl. 524—376 7 Claims

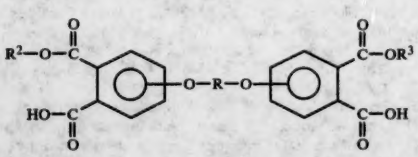
1. Aqueous coating solution comprising by weight
(A) from about 40% to 75% of solids and
(B) from about 25% to 60% of solvent,
where (A) is a polycarboxylic acid/ester-organic diamine mixture wherein the organic diamine has the formula,

$$NH_2R^1NH_2,$$

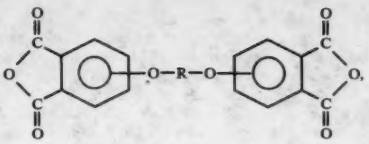
is present in about equal molar amounts and up to about a 25 mole percent excess over the moles of organic polycarboxylic acid/ester which mixture is a member selected from
(i) a mixture of 40 to 80 mole percent of tetra-acid of the formula,



and 20 to 60 mole percent of a half-ester of the formula,



or (ii) a mixture consisting essentially of (i) and from 0 to 10 mole percent, based on total moles of said tetra-acid and said half-ester, of organic dianhydride of the formula,



where (B) is a solvent mixture comprising by weight 1 to 20% by weight of water and 80 to 99% by weight of monoalkyl glycol ether having 1 to 4 carbon atoms in the alkyl group, where R is a $C_{(6-30)}$ aromatic organic radical, R^1 is a $C_{(6-30)}$ organic radical, R^2 is an alkyl terminated alkylene ether or dialkylene ether radical and R^3 is selected from R^2 or hydrogen.

4,332,709

WATER-THINNABLE BINDERS AND THEIR PREPARATION

Petrus G. Kooijmans; Wolfgang Kunze, and Arend Noordam, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 16, 1981, Ser. No. 225,557
Claims priority, application United Kingdom, Jan. 25, 1980, 8002541
Int. Cl.³ C08L 63/02
U.S. Cl. 523—416 13 Claims

1. A water-thinnable curable binder suitable for coatings which comprises reacting a polyglycidyl ether of a polyhydric phenol with an aqueous solution of an aliphatic amino acid in which at least 50% of the acid groups have been neutralized with a base, in a ratio of from about 0.7 to 1.2 aminohydrogen equivalents per epoxy equivalent.

4,332,710

THERMAL COAGULATION OF POLYURETHANE DISPERSIONS

John McCartney, Chester County, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.

Filed Feb. 17, 1981, Ser. No. 234,464
Int. Cl.³ C08K 3/34
U.S. Cl. 524—591 14 Claims

1. An aqueous polyurethane composition capable of coagulation by the application of heat thereto comprising:
an aqueous anionic polyurethane dispersion having anionic groups covalently bonded to the polymer chain and solubilized by the addition of a cationic compound which forms a salt with the anionic group; and
a compound which, when heated in an aqueous solution, generates acid which displaces the cationic compound from the covalently bonded anionic group.

4,332,711

THERMOSETTING RESINOUS BINDER COMPOSITIONS, THEIR PREPARATION AND USE AS COATING MATERIALS

Petrus G. Kooymans; Johannes J. M. H. Wintraecken; Werner T. Raudenbusch; Josepha M. E. Seelen-Kruijssen, and Gerardus C. M. Schreurs, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 3, 1979, Ser. No. 99,363
Claims priority, application Netherlands, Dec. 11, 1978, 7812028
Int. Cl.³ C08L 67/00
U.S. Cl. 523—402 15 Claims

1. A thermosetting binder composition, heat-curable to give an insoluble infusible coating, comprising:
(I) a mixture of:
(1) a non-acidic resinous compound essentially free of ethylenically unsaturation, having a molecular weight

of at least 900 and a hydroxyl content of at least 0.2 equivalent per 100 g, and

(2) a non-acidic polyester having an acid number of not more than 10 of a polycarboxylic acid cross-linking agent having more than one β-hydroxyl ester group per molecule, at least one of components (1) and (2) having a hydroxyl functionality of more than 2, and

(II) a transesterification-promoting metal salt or metal complex curing catalyst which is soluble in liquid hydrocarbons.

4,332,712

PROCESS FOR THE PRODUCTION OF ALKALI METAL SILICATE-ORGANIC PLASTICS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 233,151, Feb. 10, 1981, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, which is a continuation-in-part of Ser. No. 36,350, May 7, 1979, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Jul. 17, 1981, Ser. No. 284,486

Int. Cl.[3] C08K *3/00;* C08J *3/06, 3/08*

U.S. Cl. 524—650 17 Claims

1. The process of the production of alkali metal silicate-organic plastic by mixing and reacting the following components:

(a) an aqueous alkali metal silicate solution in the amount of 100 parts by weight

(b) a polymerable unsaturated organic compound in the amount of 5 to 100 parts by weight

(c) a mono or polycarboxylic acid salt forming compound in the amount of 1 to 10 parts by weight

(d) an organic epoxide compound selected from the group consisting of ethylene oxide, propylene oxide, epichlorohydrin and mixtures thereof in the amount of 1 to 50 parts by weight

(e) an initiator, a catalytic amount.

4,332,713

LIQUID OR PASTY THERMOSETTING ADHESIVE WHICH CAN BE PRE-GELLED AND WHICH IS BASED ON EPOXIDE RESIN, AND THE USE OF THIS ADHESIVE

Hans Lehmann, Aesch, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 29, 1980, Ser. No. 202,021

Claims priority, application Switzerland, Nov. 9, 1979, 10047/79

Int. Cl.[3] C08K *5/01*

U.S. Cl. 156—328 9 Claims

1. A liquid or pasty thermosetting adhesive, which can be pre-gelled and which is based on epoxide resin, which consists essentially of

(a) a liquid epoxide resin having on average more than one epoxide group in the molecule or a mixture of said liquid epoxide resins,

(b) an effective amount of a latent curing agent for epoxide resin, which is insoluble in the epoxide resin at room temperature, and which is selected from the group consisting of dicyandiamide, melamine, guanamine, polycarboxylic acid polyhydrazides, carboxylic acid imides and imidazole derivatives, and

(c) 5 to 50% by weight, relative to the epoxide resin, of at least one halogen-free thermoplast in powder form, which is insoluble in the epoxide resin at room temperature, and which thermoplast has a softening point of between 60° and 160° C.

4,332,714

DRIP-RETARDANT PLASTICIZED POLYPHENYLENE ETHER COMPOSITIONS CONTAINING MICROFIBRILLAR POLY(TETRAFLUOROETHYLENE)

William R. Haaf, Voorhesville; Gim F. Lee, Jr., and Robert A. Williams, both of Albany, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 753,511, Dec. 21, 1976, abandoned. This application May 3, 1978, Ser. No. 902,411

Int. Cl.[3] C08L *53/00;* C08F *8/00;* C08L *71/04;* C08K *5/52*

U.S. Cl. 524—141 15 Claims

1. A drip-retardant, plasticized thermoplastic composition which comprises, in admixture:

(a) a polyphenylene ether resin;

(b) a plasticizer in an amount at least sufficient to provide a plasticized composition after molding, said amount being sufficient to lower the temperature required to extrude the composition by at least 50° to 100° F. in comparison with the corresponding composition without the plasticizer; and

(c) a microfibrillar poly(tetrafluoroethylene) resin in an amount at least sufficient to render said thermoplastic composition non-dripping when molten.

4,332,715

VINYL RESIN COMPOSITIONS COMPRISING AN ORGANOPOLYSILOXANE

Isao Ona, Sodeuramachi, and Masaru Ozaki, Ichihara, both of Japan, assignors to Toray Silicone Limited, Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,842

Claims priority, application Japan, Jul. 31, 1980, 55/105378

Int. Cl.[3] C08K *5/54*

U.S. Cl. 524—265 6 Claims

1. A composition comprising

(a) 100 parts by weight of a vinyl resin component and

(b) from 0.01 to 20 parts by weight of an organopolysiloxane component having the formula

$$A(R_2SiO)_m(RSiO)_nSiR_2A$$
$$\quad\quad\quad

(a) a polyoxyalkylene polyol having a number average molecular weight of at least 4000, and

(b) an isocyanato terminated prepolymer formed by reacting said polyol and a second organic polyisocyanate with the proviso that the isocyanato terminated prepolymer and the first organic polyisocyanate are present in a relative amount that provides greater than 25 equivalents of isocyanato groups per equivalent of hydroxyl groups.

4,332,717

PURIFICATION OF HUMAN GROWTH HORMONE

Masaharu Kanaoka, Takarazuka; Hideki Yanagi, Toyonaka, and Shigeo Ogino, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Aug. 21, 1980, Ser. No. 180,178

Claims priority, application Japan, Aug. 21, 1979, 54/106808

Int. Cl.³ A61K *35/55;* C07G *7/00*

U.S. Cl. 260—112 R **9 Claims**

1. A method for purifying human growth hormone comprising the steps of:

contacting an aqueous solution of crude human growth hormone with a compound selected from the group consisting of crosslinked agarose having hydrophobic groups or porous resin composed of crosslinked polystyrol and having network structure; and

separating and recovering a purified human growth hormone.

4,332,718

PROCESS FOR PRODUCING AN α-L-ASPARTYL-L-PHENYLALANINE LOWER ALKYL ESTER

Satoji Takahashi, Kawasaki, and Koji Toi, Hayamamachi, both of Japan, assignors to Ajinomoto Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 66,656, Aug. 15, 1979, abandoned. This application Mar. 4, 1980, Ser. No. 126,671

Claims priority, application Japan, Sep. 5, 1978, 53-108962

Int. Cl.³ C07C *103/52;* C07D *307/60*

U.S. Cl. 260—112.5 R **3 Claims**

1. A process for producing an α-L-aspartyl-L-phenylalanine lower alkyl ester or its hydrochloride which comprises (a) treating an L-N-(1-methyl-2-lower aliphatic acylvinyl or 1-methyl-2-lower alkoxycarbonylvinyl)-aspartic acid or an alkali metal salt thereof with a dehydrating agent in an organic solvent containing an acid, (b) reacting the solution resulting from such treatment with an L-phenylalanine lower alkyl ester and (c) treating the resulting reaction mixture with water or an aqueous acid solution to remove the 1-methyl-2-lower aliphatic acylvinyl or 1-methyl-2-lower alkoxycarbonylvinyl group from the L-N-(1-methyl-2-lower aliphatic acylvinyl or 1-methyl-2-lower alkoxycarbonylvinyl)-aspartyl-L-phenylalanine lower alkyl ester.

4,332,719

METHOD AND APPARATUS FOR ISOLATING PROTEIN FROM GLANDLESS COTTONSEED

James T. Lawhon, College Station, and Larry J. Manak, Bryan, both of Tex., assignors to Texas A&M University, College Station, Tex.

Filed May 27, 1980, Ser. No. 153,100

Int. Cl.³ A23J *1/14*

U.S. Cl. 260—123.5 **9 Claims**

1. A method of obtaining protein from oilseed, comprising the steps of:

(a) extracting nonstorage protein from defatted oilseed flour or flakes by placing the oilseed flour or flakes in an aqueous solution to solubilize the nonstorage protein and then separating a storage protein-containing residue from the remaining solution;

(b) removing nonstorage protein from the remaining solution by adjusting the pH of that solution to at or near the isoelectric point for nonstorage protein, and then separating the nonstorage protein curd precipitate from the solution, leaving a nonstorage protein whey;

(c) extracting storage protein from the residue from Step (a) by placing that residue in an alkaline solution having a pH greater than about 8 to solubilize the storage protein, and then removing insoluble residue from the remaining alkaline solution;

(d) intermixing the remaining alkaline solution of Step (c) and the nonstorage protein whey of Step (b) and maintaining the pH of the mixture above 7; and

(e) separating protein from the mixture formed by Step (d) by filtration with a semipermeable membrane.

4,332,720

N,N'-POLYOXYALKYLENE BIS(LACTAM CARBOXYLIC ACIDS)

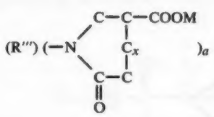
Heinz Schulze; Robert L. Zimmerman, and Harold G. Waddill, all of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 689,409, May 24, 1976, abandoned. This application Nov. 1, 1977, Ser. No. 847,642

Int. Cl.³ C07D *207/277, 211/78, 223/10, 227/087*

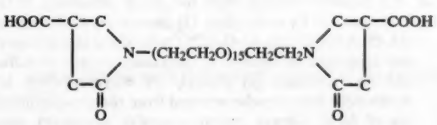
U.S. Cl. 260—239.3 R **9 Claims**

1.

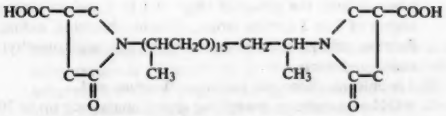


wherein x is an integer 1–2; a is an integer 2–3; M is hydrogen, alkali metal, or quaternary ammonium when x is 1 or 2; R‴ is a polyoxyalkylene chain having terminal carbon atoms to which the nitrogen atoms are bonded; and the molecular weight of R‴ is 200–2100.

8.



9.



4,332,721

PROCESS FOR PREPARING MICRONIZED SPIRONOLACTONE

Giuseppe Bernini, Milan, Italy, assignor to Secrifarma S.p.A., Milan, Italy

Filed Feb. 19, 1981, Ser. No. 235,816

Claims priority, application Italy, Mar. 6, 1980, 20391 A/80

Int. Cl.³ C07J *19/00*

U.S. Cl. 260—239.57 **3 Claims**

1. A process for preparing micronized spironolactone having increased biological activity, which comprises micronizing the spironolactone by precipitation with water from a solution with preferably organic solvents selected from the group con-

sisting of lower alcohols, ethers, lactones, ether-alcohols and glycols at a temperature from 0° to 30° C. and under vigorous stirring.

4,332,722

CYCLIZATION TO FORM CEPHEM RING AND INTERMEDIATES THEREFOR

Teruji Tsuji, Takatsuki; Yoshio Hamashima, Kyoto; Mitsuru Yoshioka, Toyonaka; Masayuki Narisada, Ibaraki; Hiroshi Tanida; Taichiro Komeno, both of Osaka, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

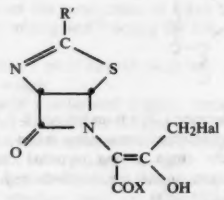
Division of Ser. No. 66,462, Aug. 13, 1979, abandoned, which is a continuation of Ser. No. 856,807, Dec. 1, 1977, abandoned, which is a division of Ser. No. 658,665, Feb. 17, 1976, Pat. No. 4,079,181. This application Feb. 27, 1980, Ser. No. 125,232

Claims priority, application Japan, Feb. 17, 1975, 50-19612; Feb. 21, 1975, 50-22229; Mar. 7, 1975, 50-28452; Mar. 30, 1975, 50-33808

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.4 **6 Claims**

1. A member selected from the group consisting of (a) a compound of the formula



wherein

R′ is a member selected from the group consisting of (1) hydrogen, (2) C_1 to C_4 alkyl, (3) phenyl, (4) α-chlorobenzyl, (5) ArCQQ′, (6) Ar-G-CQQ′ wherein Q and Q′ represent hydrogen or methyl, G represents oxygen or sulfur and Ar represents (a) phenyl, (b) dihydrophenyl, (c) monocyclic heterocyclic selected from the group consisting of furyl, thienyl, pyrryl, oxazolyl, isoxazolyl, oxatriazolyl, pyrazolyl, imidazolyl, triazolyl, tetrazolyl, pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, and triazinyl or (d) one of said groups (a) to (c) substituted by an inert group selected from the group of alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, chlorine, bromine, iodine, fluorine, trifluoromethyl hydroxy, cyano, aminomethyl, amino and nitro,

Hal is chlorine, bromine, iodine or fluorine, and

X is OH or a carboxy protecting group containing up to 20 carbon atoms, and (b) an oxo tautomer of said compound.

4,332,723

PROCESS FOR PREPARING N-VINYL CARBAZOLES

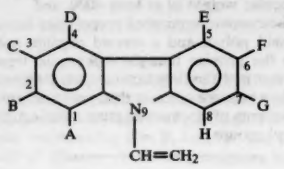
Michael P. Fleming, Boulder, Colo., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 20, 1981, Ser. No. 265,303

Int. Cl.³ C07D *209/86*

U.S. Cl. 548—444 **20 Claims**

1. A process for the preparation of a N-vinylcarbazole represented by the following formula:



wherein:

substituents A, B, C, D, E, F, G and H are independently selected from the group consisting of hydrogen, fluorine, chlorine, bromine, iodine, methyl, ethyl, n-propyl, isopropyl, butyl, amyl, iso-amyl, methoxy, ethoxy, nitro, cyano, methylamino, ethylamino, dimethylamino, diethylamino and trifluoromethyl;

which process comprises:

(a) contacting the appropriately N-unsubstituted carbazole with a 1,2-dihaloethane in the presence of a phase transfer catalyst; and

(b) treating with a basic agent to form the corresponding N-vinylcarbazole.

4,332,724

PROCESS FOR PREPARING 4,5,6,7-TETRAHYDRO-7-OXOBENZO[B]THIOPHENES AND 1,2,3,4-TETRAHYDRO-4-OXONAPHTHALENES

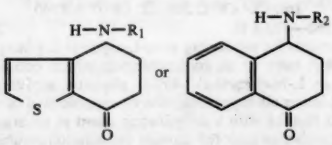
Terence J. Bentley, Cranbury; William H. Gastrock, Hightstown, and Goro Asato, Titusville, all of N.J., assignors to American Cyanamid Co., Stamford, Conn.

Continuation of Ser. No. 713,768, Aug. 12, 1976, abandoned. This application Nov. 16, 1977, Ser. No. 851,992

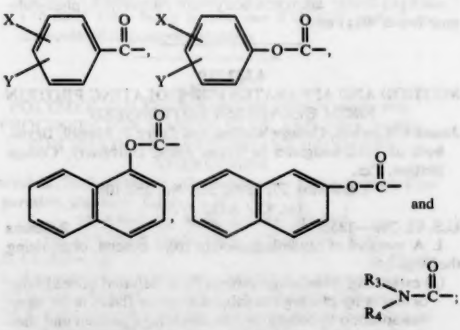
Int. Cl.³ C07D *209/34, 207/24, 333/24;* C07C *125/06*

U.S. Cl. 260—326 S **25 Claims**

1. A process for the preparation of a compound of the formula:



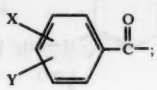
wherein R_1 and R_2 are each a substituent selected from the group consisting of alkanoyl C_1–C_7, halogen-substituted alkanoyl C_1–C_7, carboalkoxy C_1–C_4,



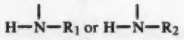
and

R_3 is a radical selected from the group consisting of hydrogen and alkyl C_1–C_4, R_4 is a substituent selected from the group consisting of hydrogen, alkyl C_1–C_8, alkanoyl (C_2–C_4), halo-

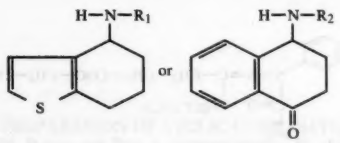
gen-substituted alkanoyl (C_2–C_4), halogen-substituted alkanoyl (C_2–C_4) and



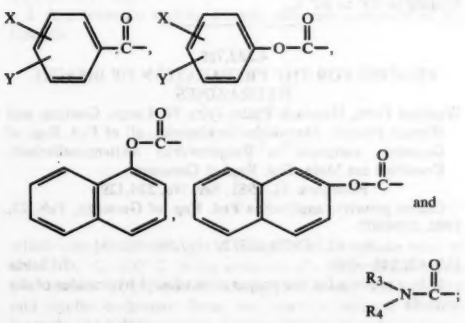
and when the



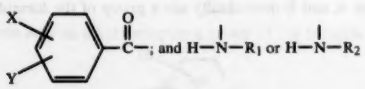
moiety is cyclized, each represents a moiety selected from the group consisting of succinimido, maleimido and phthalimido, X and Y are each a radical selected from the group consisting of hydrogen, fluorine, chlorine, bromine iodine, nitro, alkyl C_1–C_4; the racemic mixtures and the optical isomers thereof; comprising the steps of: subjecting a compound of the formula:



wherein R_1 and R_2 are each a radical selected from the group consisting of alkanoyl C_1–C_7, halogen-substituted alkanoyl C_1–C_7, carboalkoxy C_1–C_7,



R_3 is selected from the group consisting of hydrogen and alkyl (C_1–C_4); R_4 is selected from the group consisting of hydrogen, alkyl (C_1–C_8), alkanoyl (C_2–C_4), and halogen-substituted alkanoyl (C_2–C_4), and



is each cyclized, each represents a moiety selected from the group consisting of succinimido, maleimido and phthalimido; X and Y are selected from the group consisting of hydrogen, halogen, nitro, alkyl C_1–C_4 and alkoxy (C_1–C_4); the racemic mixtures and the optical isomers thereof; to the action of an oxygen containing gas at positive pressures up to about 100 psig and at a temperature ranging from about 20° C. to about 150° C. in the presence of a cobalt catalyst selected from the group consisting of a cobaltous salt and a cobaltic salt, said catalyst being present in a solvent-substrate mixture, wherein said catalyst is present in said mixture in a molar ratio of 1:1 to 15:1, and said solvent being selected from the group consisting of a (C_2–C_6) alkanoic acid, a mixture of a (C_2–C_6) alkanoic acid and a (C_2–C_6) alkanoic acid anhydride, a mixture of a (C_2–C_6) alkanoic acid and an aliphatic ketone, a mixture of a (C_2–C_6) alkanoic acid and a cycloaliphatic ketone, a mixture of a (C_2–C_6) alkanoic acid and an aliphatic aldehyde other than formaldehyde, a mixture of a (C_2–C_6) alkanoic acid and t-butyl alcohol and a mixture of a (C_2–C_6) alkanoic acid and acetonitrile, for a period of time sufficient to essentially complete the reaction, and thereafter recovering said resultant oxidized product.

4,332,725

PROCESS FOR THE PREPARATION OF 1-[3-MERCAPTO-(2S)-METHYLPROPIONYL]-PYRROLIDINE-(2S)-CARBOXYLIC ACID

Janos Fischer; Laszlo Rozsa; Pal Vago; Anna Bakonyi, and Gabor Fazekas, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

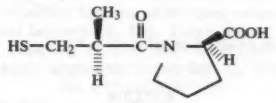
Filed Dec. 22, 1980, Ser. No. 218,814

Claims priority, application Hungary, Dec. 29, 1979, EE 2720

Int. Cl.³ C07D *207/16*

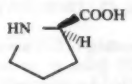
U.S. Cl. 548—533 **6 Claims**

1. A process for the preparation of 1-[3-mercapto-(2S)-methyl-propionyl]-pyrrolidine-(2S)-carboxylic acid of the formula (I)

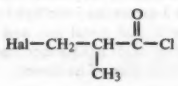


which comprises the steps of:

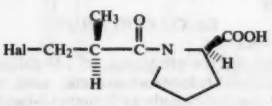
(a) N-acylating L-proline of the formula (IV)



with a 3-halo-2-methyl-propionyl chloride of the formula (III)



wherein Hal is a halogen atom, in an aqueous medium at a temperature of 0° to 25° C. in the presence of an alkali selected from the group consisting of an alkali hydroxide, alkali carbonate and an alkali bicarbonate, wherein the alkali is present in a molar amount double the amount of the compound of the formula (III) or of the compound of the formula (IV) to form an aqueous mixture of a 1-[3-halo-(2S)-methylpropionyl]-pyrrolidine-(2S)-carboxylic acid of the formula (II)

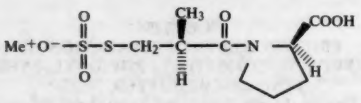


and its diastereomer 1-[3-halo-(2R)-methyl-propionyl]-pyrrolidine-(2S)-carboxylic acid;

(b) acidifying the aqueous mixture formed during step (a) under ice cooling to form crystals of 1-[3-halo-(2S)-methylpropionyl]-pyrrolidine-(2S)-carboxylic acid while 1-[3-halo-(2R)-methyl-propionyl]-pyrrolidine-(2S)-carboxylic acid remains in solution;

(c) separating the crystals of the 1-[3-halo-(2S)-methylpropionyl]-pyrrolidine-(2S)-carboxylic acid from the solution containing the 1-[3-halo-(2R)-methylpropionyl]-pyrrolidine-(2S)-carboxylic acid;

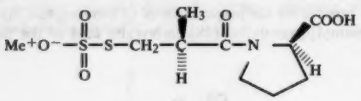
(d) [treating the 1-[3-halo-(2S)-methyl-propionyl]-pyrrolidine-(2S)-methylpropionyl]-pyrrolidine-(2S)-carboxylic acid with an alkali thiosulfate to form a compound of the formula (V)



wherein Me is an alkali metal; and

(e) hydrolyzing the compound of the formula (V) with an acid to form the compound of the formula (I).

5. A salt of the formula (V)



wherein Me is an alkali metal.

4,332,726

PURIFICATION OF MERCAPTOACYL AMINO ACIDS

John N. Korzun, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 25, 1980, Ser. No. 180,790

Int. Cl.³ C07D *207/16*

U.S. Cl. 548—533 **5 Claims**

1. A method of separating 1-(D-3-mercapto-2-methyl-1-oxopropyl)-L-proline, (S,S) from an acidic solution containing 1-(D-3-mercapto-2-methyl-1-oxopropyl)-L-proline (S,S) and 1,1'-[dithiobis(D-2-methyl-1-oxopropane-3,1-diyl)]bis[L-proline], (S,S,S,S) comprising treating said acidic solution with a bivalent metal ion selected from the group consisting of zinc, cadmium, strontium, barium, beryllium, and mercury to form a precipitate of 1-(D-3-mercapto-2-methyl-1-oxopropyl)-L-proline, (S,S) bound with said metal ion, and then treating said precipitate to liberate said 1-(D-3-mercapto-2-methyl-1-oxopropyl)-L-proline, (S,S) free of its dimer.

4,332,727

PREPARATION OF 1-(4-CHLOROBENZOYL)-5-METHOXY-2-METHYL-3-INDOLYLACETOXYACETIC ACID

Karl-Heinz Boltze, Bergisch-Gladbach; Siegfried Raddatz, and Peter-Rudolf Seidel, both of Cologne, all of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co. KG, Cologne, Fed. Rep. of Germany

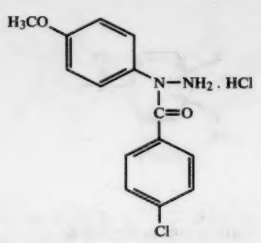
Filed Oct. 2, 1980, Ser. No. 193,497

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943125

Int. Cl.³ C07D *209/28*

U.S. Cl. 548—501 **2 Claims**

1. A process for the production of 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-3-indolylacetoxyacetic acid, substantially free from 1-benzoyl-5-methoxy-2-methyl-3-indolylacetoxyacetic acid, which comprises the step of reacting α-(4-chlorobenzoyl)-4-methoxyphenylhydrazine hydrochloride of the formula

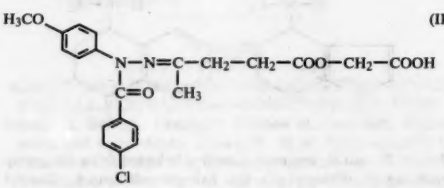


(I)

or the corresponding sulphonate, with free laevulinoyloxyacetic acid of the formula

$$CH_3\text{-}CO\text{-}CH_2\text{-}CH_2\text{-}COO\text{-}CH_2\text{-}COOH \qquad (II)$$

in glacial acetic acid as the solvent, at a temperature between 20° and 60° C., and cyclizing the hydrazone initially formed, of the formula



(III)

to the desired indole, with the splitting off of ammonia by heating to 40° to 80° C.

4,332,728

PROCESS FOR THE PREPARATION OF BISACYL HYDRAZINES

Winfried Orth, Hassloch/Pfalz; Fritz W. Lange, Gauting, and Werner Fickert, Mannheim-Seckenheim, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

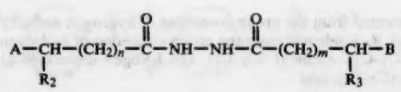
Filed Jan. 12, 1981, Ser. No. 224,129

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006807

Int. Cl.³ C07D *207/27, 211/76, 401/12*

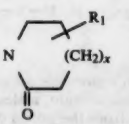
U.S. Cl. 548—519 **7 Claims**

1. In a process for the preparation of acyl hydrazides of the formula

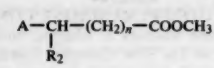


I

wherein A and B individually are a group of the formula

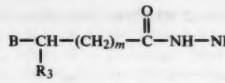


wherein R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, x is 0 or 1 and R_2 and R_3 are individually selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and n and m are individually 0, 1, 2 or 3 by reacting a compound of the formula



II

with a hydrazide of the formula



III

the improvement comprising effecting the reaction in the presence of at least one catalyst of the formula R′—OMe wherein R′ is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and Me is an alkali metal.

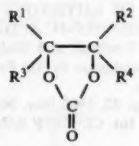
4,332,729

PREPARATION OF CYCLIC CARBONATES

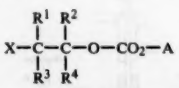
James M. Renga, and Roy A. Periana-Pillai, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 17, 1981, Ser. No. 284,037
Int. Cl.³ C07D *317/38, 317/36, 317/46*
U.S. Cl. 549—229 **8 Claims**

1. A process for making a cyclic alkylene carbonate of the formula



which comprises heating a β-halogenated carbonate ester at about 100° C.–300° C. in the presence of a catalytically effective amount of chemically combined mercury and isolating said cyclic carbonate from the reaction mixture thereby formed, said halogenated carbonate ester having the formula



wherein A is an alkyl group or a group of the formula

wherein the R groups are individually hydrogen, a hydrocarbon group, $—CH_2X$, $—CH_2Y$, and each of the pairs R^1, R^2 and R^5, R^6 may together form an alkylene group of 3–6 carbon atoms, each X is individually Cl, Br, or I, and Y is an alkoxy or aroxy group.

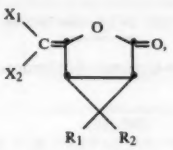
4,332,730

DIHALOMETHYLENELACTONE PYRETHROID INTERMEDIATES

Petrus A. Kramer, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed May 22, 1981, Ser. No. 266,579
Claims priority, application United Kingdom, May 30, 1980, 8017700; European Pat. Off., May 8, 1981, 81200491
Int. Cl.³ C07D *307/93*
U.S. Cl. 549—302 **5 Claims**

1. A compound of formula



(I)

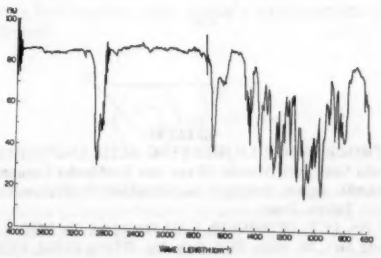
wherein X_1 and X_2 are the same or different halogen atoms, and R_1 and R_2 are the same or different and are hydrogen atoms or alkyl groups with 1–10 carbon atoms.

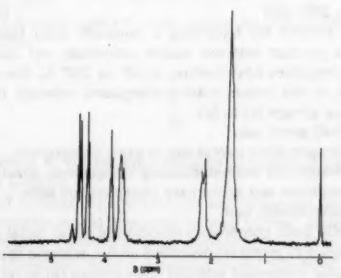
4,332,731

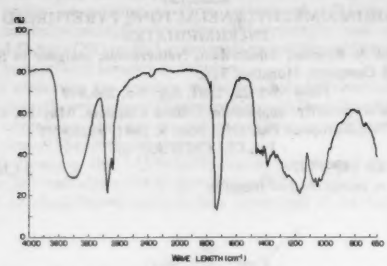
2-METHYLENE-1,4,6-TRIOXASPIRO[4,6]UNDECANE, PROCESS FOR THE PREPARATION THEREOF AND PROCESS FOR THE PREPARATION OF POLYMERS

Takeshi Endo, Yokohama; Takahisa Ogasawara, Tokai, and Kiyokazu Mizutani, Inasawa, all of Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 188,267
Claims priority, application Japan, Sep. 22, 1979, 54-121584
Int. Cl.³ C07D *317/02*
U.S. Cl. 549—334 **1 Claim**







1. 2-Methylene-1,4,6-trioxaspiro[4,6]undecane.

4,332,732

ANTITUMOR AGENTS

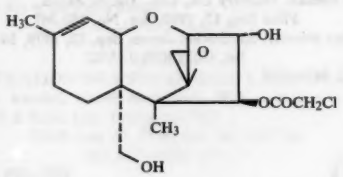
Henry Schmitz, Syracuse; Takushi Kaneko, Fayetteville; John M. Essery, Pleasantville, and Terrence W. Doyle, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 137,336, Apr. 4, 1980, Pat. No. 4,284,568. This application Mar. 4, 1981, Ser. No. 240,340

Int. Cl.³ C07D *311/78*

U.S. Cl. 549—332 **1 Claim**

1. The compound having the formula



4,332,733

PROCESS FOR LIQUEFYING ACID ANHYDRIDE

Hiroshi Samejima; Mareki Miura, and Yoshinobu Onuma, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP79/00049, § 371 Date Oct. 28, 1980, § 102(e) Date Oct. 28, 1980, PCT Pub. No. WO80/01804, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 28, 1979, Ser. No. 224,570

Int. Cl.³ C07D *307/89*

U.S. Cl. 549—240 **14 Claims**

1. A process for liquefying a normally solid Diels-Alder reaction product between maleic anhydride and decatriene, which comprises heat-treating at 60° to 250° C. the reaction product in the presence of a compound selected from the following groups (a) to (e):

(a) alkali metal salts;

(b) nitrogen atom-containing organic compounds;

(c) phosphorus atom-containing compounds selected from phosphines and quaternary phosphonium salts;

(d) thiocyanates; and

(e) solid basic compounds (except the alkali metal salts belonging to group (a) described above, wherein the amount of said compound selected from groups (a) to (e) is 0.005 to 3.0 parts by weight per 100 parts by weight of said solid Diehls-Alder reaction product between maleic anhydride and decatriene.

4,332,734

3,3-DISUBSTITUTED-FURANDIONE COMPOUNDS

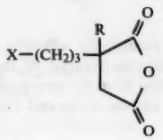
Edmund P. Woo, and Michael J. Mullins, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 9, 1980, Ser. No. 214,613

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—253 **6 Claims**

1. A 3,3-disubstituted tetrahydrofurandione compound of the formula



wherein:

R is phenyl or C_{1-10} alkyl;

X is $-NH_2$, $-C(O)Cl$, $-OH$ or $-CO_2R'$, where R' is hydrogen or R.

4,332,735

ANTIFUNGAL COMPOUND

Robert J. Alaimo; Joseph E. Gray, and George M. Klein, all of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 6, 1981, Ser. No. 281,236

Int. Cl.³ C07D *307/46*

U.S. Cl. 549—496 **1 Claim**

1. The compound 5-[3,4-dimethoxyphenyl]-N-{[(methylamino)carbonyl]oxy}-α-oxo-2-furanethanimidoyl chloride.

4,332,736

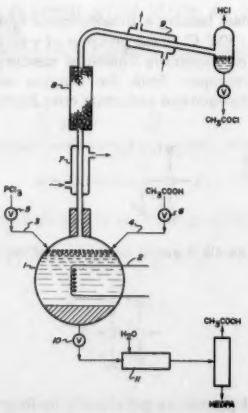
PRODUCTION OF 1-HYDROXYALKYLIDENE-1, 1-DIPHOSPHONIC ACID ESTERS

William E. Starner, Freeland, and Walter F. Yext, Mahanoy City, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 22, 1980, Ser. No. 190,009

Int. Cl.³ C07F *9/38*

U.S. Cl. 260—403 **8 Claims**



1. In a process for producing an acylated 1-hydroxy alkylidene-1,1-diphosphonic acid (HADPA) by reacting PX_3, where

X is a halogen atom and RCOOH where R is an alkyl group containing from 1–18 carbon atoms to produce said acylated HAPDA, the improvement which comprises:

introducing said PX_3 to a reactor containing RCOOH;

maintaining RCOOH during said introduction of PX_3 at a temperature T such that the resulting reaction between RCOOH and PX_3 results in producing a product mixture comprising acylated HAPDA and by-product phosphorous acid, said temperature being at or greater than 100° C. where R is an integer from 1–4 and at or greater than 130° C. where R is an integer from 5–18 carbon atoms whereby the by-product phosphorous acid detectable by iodometric titration at any time in the product mixture is less than 5% of the total weight of the acylated HADPA and phosphorous acid formed.

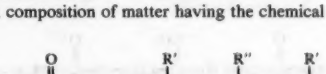
4,332,737

ACID REACTION PRODUCTS OF POLYMERIC AMINES

Philip Manos, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 18, 1980, Ser. No. 141,662
Int. Cl.³ C09F *5/00*
U.S. Cl. 260—404.5 **7 Claims**

1. A composition of matter having the chemical formula:



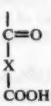
wherein

R is a C_{9-23}hydrocarbyl group,

R′ is selected from H and

and wherein at least one R′ is H,

R″ is



group where X is a divalent hydrocarbyl group of 2 to 34 carbon atoms,

n is an integer of 2 or 3 or a combination of 2 and 3, a is an integer of 0–3, b is an integer of 1–2, c is an integer of 0–3 and a+b+c is 2–8.

4,332,738

ESTERIFICATION OF NEO ACIDS BY THE USE OF CATION EXCHANGE RESINS

Francisco M. Benitez, and Michael F. English, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 24, 1980, Ser. No. 209,788
Int. Cl.³ C09F *5/08*; C08H *3/00*
U.S. Cl. 260—410.6 **5 Claims**

1. A method for the direct esterification of a neo acid having from 5 to 28 carbon atoms in its molecule which comprises contacting said acid with an alcohol in a non-aqueous system in the presence of a sulfonic acid cation exchange resin used in its acid form and having a macro-reticular structure.

4,332,739

PROCESS FOR THE MANUFACTURE OF AROMATIC ISOCYANATES

Jacques Kervennal, Lyons; Boubaker Elleuch, Rilleux-la-Pape, and Younès B. Taarit, Lyons, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Nov. 3, 1980, Ser. No. 203,249
Claims priority, application France, Nov. 27, 1979, 79 29123
Int. Cl.³ C07C *118/06*
U.S. Cl. 260—453 PC **13 Claims**

1. The process for the manufacture of aromatic isocyanates comprising reacting, in the liquid phase, an aromatic nitro compound with carbon monoxide in the presence of a catalyst comprising a zeolite containing at least one introduced active metal.

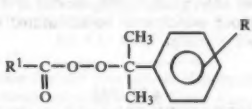
4,332,740

PROCESS FOR PREPARING PEROXYESTERS

Kenji Kato, Kariya, and Hidehiko Hagii, Aichi, both of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Jan. 9, 1981, Ser. No. 223,551
Claims priority, application Japan, Jan. 19, 1980, 55-4755
Int. Cl.³ C07C *179/02*
U.S. Cl. 260—453 RZ **5 Claims**

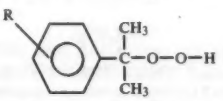
1. A process for preparing a peroxyester of the formula



wherein R is a C_1 to C_4 linear or branched alkyl located in meta or para position on the benzene ring, and R^1 is selected from the group consisting of C_1 to C_{12} linear or branched alkyl, phenyl and substituted phenyl,

which consists essentially of the steps of:

1. in a first reaction stage, mixing a hydroperoxide of the formula



wherein R has the same meaning as defined above, with an aqueous potassium hydroxide solution containing from 35 to 60% by weight of potassium hydroxide and with a non-polar organic solvent, under conditions effective to form a homogeneous solution of the potassium salt of said hydroperoxide dissolved in said non-polar organic solvent, then

2. in a second reaction stage, mixing an acid halide of the formula

wherein R^1 has the same meaning as defined above and X is a halogen,

with said homogeneous solution of said potassium salt of said hydroperoxide in said non-polar organic solvent, under conditions effective to form a solution containing from 50 to 80% by weight of said peroxyester dissolved in said non-polar organic solvent, and then

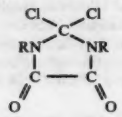
3. recovering said solution of said peroxyester dissolved in said non-polar organic solvent.

4,332,741
DICHLOROPARABANIC ACID STABILIZED DIPHENYLMETHANE DIISOCYANATE-POLYMETHYLENE POLYPHENYL ISOCYANATE COMPOSITIONS

Gary L. Statton, and Stephen H. Harris, both of West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 23, 1981, Ser. No. 246,539
Int. Cl.³ C07C *119/048*
U.S. Cl. 260—453 SP **5 Claims**

1. A method for the storage stabilization of liquid diphenylmethane diisocyanate-polymethylene polyphenyl isocyanate mixtures derived from the thermal decomposition of the corresponding diphenylmethane dicarbamates and polymethylene polyphenyl carbamates prepared by the acid condensation of N-aryl carbamic acid ester with formaldehyde, which comprises incorporating in said liquid isocyanate mixtures from about 0.001 to 1.0 percent by weight of dichloroparabanic acid compound having the formula



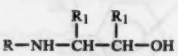
wherein R is an alkyl group having from 1 to 4 carbon atoms or a phenyl group which may be substituted with a 1 to 4 carbon atom alkyl group.

4,332,742
LOW TEMPERATURE STORAGE STABLE LIQUID DIPHENYLMETHANE DIISOCYANATES

Gary F. Allen, New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jun. 22, 1981, Ser. No. 276,144
Int. Cl.³ C07C *119/048*
U.S. Cl. 260—453 SP **7 Claims**

1. A room temperature storage stable liquid isocyanate comprising the reaction product of a diphenylmethane diisocyanate and an N-substutited ethanolamine of the formula:



wherein R represents a C_6 to C_{10} aryl and wherein at least one R_1 represents hydrogen and the other R_1 is selected from the group consisting of hydrogen, C_1 to C_3 alkyl and phenyl.

4,332,743
PROCESS FOR THE LIQUID PHASE PRODUCTION OF C_1 TO C_3 CARBOXYLIC ACIDS

Clive G. Gasser, Cottingham, and John Russell, Hull, both of England, assignors to BP Chemicals Limited, London, England

Filed Jan. 24, 1979, Ser. No. 6,092
Claims priority, application United Kingdom, Jan. 27, 1978, 03320/78
Int. Cl.³ C07C *27/10*; C07B *3/00*
U.S. Cl. 562—512.2 **8 Claims**

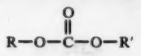
1. In a process for the production of C_1 to C_3 monocarboxylic acids, including a substantial proportion of acetic acid, by oxidizing in a reaction zone a paraffinic hydrocarbon feedstock containing from 4 to 8 carbon atoms in the molecule with molecular oxygen at a temperature in the range from 150° to 250° C. and at an elevated pressure of 30 to 70 bar sufficient to maintain the reactants in the liquid phase, the improvement which comprises carrying out said oxidation in the presence of at least one added phosphorus-containing compound selected from the group consisting of phosphoric acids and phosphates of metals of Groups I and II of the Periodic Table in an amount in the range of from 0.5 to 100 ppm, calculated as elemental phosphorus.

4,332,744
UNSYMMETRICAL POLYNITROCARBONATES AND METHODS OF PREPARATION

William H. Gilligan, Ft. Washington, Md., and Scott L. Stafford, Petersburg, Ak., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

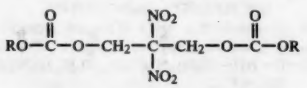
Filed Jan. 13, 1981, Ser. No. 224,776
Int. Cl.³ C07C *69/96, 68/02*
U.S. Cl. 260—463 **27 Claims**

1. A compound of the formula



wherein $R \neq R'$ and wherein R and R' are each selected from the group consisting of $-CH_2C(NO_2)_3$, $-CH_2CF(NO_2)_2$, $-CH_2CF_2(NO_2)$, $-CH_2CCl(NO_2)_2$, $-CH_2CF_3$, $-CH_2CCl_3$, $-CH_2C(NO_2)_2CH_3$, and $-CH_2CF_2CF_2H$.

12. A compound of the formula



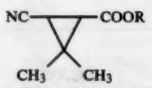
wherein R is selected from the group consisting of $-CH_2C(NO_2)_3$, $-CH_2CF(NO_2)_2$, $-CH_2CF_2(NO_2)$, $-CH_2CCl(NO_2)_2$, $-CH_2CF_3$, $-CH_2CCl_3$, $-CH_2C(NO_2)_2CH_3$, and $-CH_2CF_2CF_2H$.

4,332,745
PREPARATION OF 2-CYANO-3,3-DIMETHYL-CYCLOPROPANE-1-CARBOXYLIC ACID ESTERS AND INTERMEDIATES THEREFOR

Fritz Maurer; Hans-Jochem Riebel, both of Wuppertal, and Uwe Priesnitz, Unna-Massen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 27, 1980, Ser. No. 153,298
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923777
Int. Cl.³ C07C *120/00, 121/46, 121/16*
U.S. Cl. 260—464 **6 Claims**

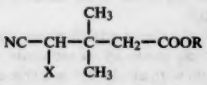
1. A process for the preparation of a 2-cyano-3,3-dimethylcyclopropane-1-carboxylic acid ester of the formula



in which

R is alkyl,

comprising reacting a 3-halogeno-3-cyano-2,2-dimethylpropane-1-carboxylic acid ester of the formula



in which

X is chlorine or bromine,
with a base at a temperature from about 0° to 100° C.

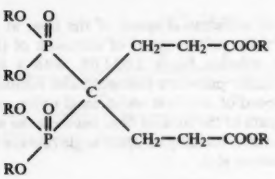
4,332,746

DIPHOSPHONODICARBOXYLIC ACID ESTERS

Horst-Dieter Thamm, Kelkheim; Volker Knittel, Wiesbaden; Werner Sommer, and Gerhard Weckler, both of Sulzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 73,653, Sep. 10, 1979, Pat. No. 4,260,422, which is a continuation of Ser. No. 843,144, Oct. 17, 1977, abandoned. This application Jul. 28, 1980, Ser. No. 172,584
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1976, 2647042; Apr. 30, 1977, 2719415
Int. Cl.³ C07F *9/40*
U.S. Cl. 260—932 **3 Claims**

1. A phosphonocarboxylic acid compound of the formula



wherein the radicals R may be identical or different and represent alkyl radicals of 1 to 18 carbon atoms substituted 1 to 3 times with chlorine or bromine.

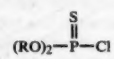
4,332,747

PROCESS FOR PRODUCING DIALKYL PHOSPHOROCHLORIDOTHIONATES

James W. Watson, Jr., Sandy Hook, Conn.; Michael P. Silvon, Mahopac, N.Y., and Brian J. Lobo, Columbia, Tenn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 17, 1980, Ser. No. 188,153
Int. Cl.³ C07F *9/20*
U.S. Cl. 260—986 **9 Claims**

1. An improved process for producing dialkyl phosphorochloridothionates having the formula:



where R is a lower alkyl having from 1 to 8 carbon atoms, by the reaction of dialkyl phosphorodithioic acid with chlorine gas, wherein the chlorine added after the initial from 0.63 to 0.86 moles of chlorine per mole of dialkyl phosphorodithioic acid added in the process is diluted with an inert gas.

4,332,748

POLYETHYLENE RECOVERY FROM BROKE

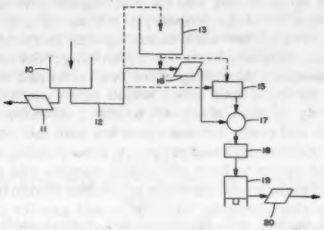
Henry A. Fremont, Wyoming, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 709,898, Jul. 29, 1976, abandoned. This application Jun. 2, 1980, Ser. No. 155,606
Int. Cl.³ B01J *2/06*
U.S. Cl. 264—11 **6 Claims**

1. A process for the recovery of polyethylene from a mixture comprising water, polyethylene fragments and cellulosic pulp fibers, said process comprising:

defibering said mixture in a first hydropulper to remove a first quantity of said cellulosic pulp fibers;

thermally drying the defibered mixture in a thermal tumbler dryer to dehydrate said defibered mixture to less than about 15% water, said thermal tumbler dryer having a stream of drying air flowing therein which serves to carry away a second quantity of cellulosic pulp fibers from said defibered mixture during said drying process; and



pelletizing the polyethylene fragments remaining in said dehydrated defibered mixture.

4,332,749

PROCESS FOR THE PRODUCTION OF POLYOLEFINE-BASED FIBRIDS, AND THE FIBRIDS OBTAINED

Jean-Pierre Pleska, Paturages, Belgium, assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 23, 1980, Ser. No. 142,996
Claims priority, application France, May 10, 1979, 79 12146
Int. Cl.³ B01J *2/02*
U.S. Cl. 264—13 **13 Claims**

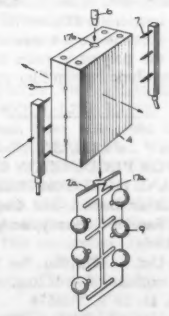
1. In a process for the production of polyolefine-based fibrids by the abrupt expansion of a liquid mixture of molten polyolefine and solvent, by passage through an orifice, the mixture being under pressure and temperature conditions which are such that the abrupt expansion causes the instantaneous vaporisation of the solvent and the solidification of the polyolefine in the form of fibrids, the improvement comprising subjecting to abrupt expansion a liquid mixture containing (1) a polyolefine of normal molecular weight, (2) said solvent and (3) a polyolefine of low molecular weight, onto which a polar monomer has been grafted.

4,332,750

BLOW-MOLDING AND DEGATING HOLLOW SHAPES

Stanley L. Roggenburg, Jr., and Michael E. Tully, both of Staten Island, N.Y., assignors to Essex Chemical Corporation, Clifton, N.J.

Filed Mar. 11, 1980, Ser. No. 129,262
Int. Cl.³ B29C *17/07, 17/08*
U.S. Cl. 264—23 **1 Claim**



1. A method for making a hollow thermoplastic shape, such as a Christmas tree ornament ball, said method comprising forming a tubular thermoplastic parison at plasticized tempera-

ture, closing a blow molding die on the parison so as to flatten it and form the parison into two layers, said die having a cavity defining said shape and enclosing a portion of said flattened parison, while closing said die pinching the parison's said two layers together at the periphery of said cavity so as to weld the two layers together while extruding their thermoplastic away from said periphery into a space providing relief accommodating consequent thickening of the two layers and so as to form a gate having a solid pinch which tapers conically with an angularity of from about 40° to about 60° from said layers towards said cavity and has a junction with said portion in the cavity at the cavity's said periphery, blow molding said portion into said cavity to form said shape, opening said die so as to free said parison with the shape connected thereto by said gate, and applying ultrasonic vibration to said gate for transmission through the pinch to said junction so as to heat and melt the latter and free said shape from said parison, said die having a spine cavity and a plurality of said cavities for molding the shapes, said spine cavity being separated from said cavities, and a spine being blow molded from said parison in said spine cavity separately and independently with respect to said blow molding, said die being opened and said parison being allowed to fall and said junction being made with a thickness of from about 0.002" to about 0.012" so as to hold said shape to said parison when the fall of the latter is abruptly stopped, but so as to permit melting of the junction by said ultrasonic vibration, flattening of said parison forming folds joining said two layers, said die being closed on each parison so that said portion of each parison includes one of said folds, and a needle blow pin being pierced through said one of said folds in each instance to effect said blow molding.

4,332,751

METHOD FOR FABRICATING THIN FILMS OF PYROLYTIC CARBON

Gilbert W. Brassell, Lenoir City; John Lewis, Jr., Oak Ridge, both of Tenn., and Gary W. Weber, Amherst, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 13, 1980, Ser. No. 129,868

Int. Cl.³ B29C *25/00, 7/00*

U.S. Cl. 264—28 **6 Claims**

1. A method for fabricating a composite structure consisting of a film of pyrolytic carbon with an adherent coating of polymeric resin thereon, comprising the steps of forming a film of pyrolytic carbon on a substrate having a concave surface of revolution by contacting said concave surface with a gaseous composition containing a hydrocarbon gas and an inert diluent gas therefor while maintaining the substrate at a temperature sufficient to decompose the hydrocarbon gas contacting the concave surface of the substrate to form said film thereon, depositing on the resulting film of pyrolytic carbon an adherent coating of a polymeric resin characterized by shrinking upon chilling to a temperature below 0° C., and chilling the polymeric coating substrate to a temperature below 0° C. to sufficiently shrink the polymeric resin coating to effect the separation of the pyrolytic carbon film attached thereto from the substrate.

4,332,752

PROCESS FOR PRODUCTION OF DIALYSIS MEMBRANE HOLLOW FIBER CHAINS

Werner Henne; Werner Bandel, and Gustav Dünweg, all of Wuppertal, Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

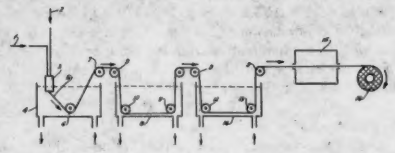
Filed Oct. 1, 1979, Ser. No. 80,788

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842835; Feb. 21, 1979, 2806576

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—41 **5 Claims**

1. Process for making hollow fiber with continuous hollow interior consisting of regenerated cellulose for use in semipermeable membranes, comprising extruding a cellulose-cuoxam solution having cellulose content between 6 and 10% by weight through the annular slot of a spinneret into a coagulation bath of aqueous sodium hydroxide having sodium hydroxide content between 10 and 20% by weight while passing a cavity forming fluid through said spinneret, and guiding the formed hollow fiber over successive withdrawal rollers followed by passing the fiber to at least one after treatment bath prior to drying it,



the ratio of withdrawal speed of the fiber at a first withdrawal roller to the speed of extrusion of the cellulose-cuoxam solution being 1.00:1.05, with a second withdrawal roller provided following and rotated at 90–98% of the speed of said first withdrawal roller, and the direction of path of the formed fiber between the spinneret and the first roller forming an acute angle relative to the axis of the spinneret slot.

4,332,753

POROUS REFRACTORY MATERIALS

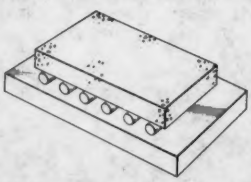
Peter A. Crooke, Mackworth, and Kenneth Gallimore, Derby, both of England, assignors to Rolls-Royce Limited, London, England

Filed Feb. 11, 1981, Ser. No. 233,371

Claims priority, application United Kingdom, Apr. 16, 1980, 8012483

Int. Cl.³ B29J *1/00*

U.S. Cl. 264—44 **4 Claims**



1. A method of making a porous refractory shape comprising the steps of: impregnating a shaped sponge having pores and a cellular structure with a suspension or dispersion of refractory particles in a liquid; squeezing the sponge to remove excess liquid therefrom; air drying the sponge to remove further liquid therefrom; providing a plate-like supporting base made of a refractory material capable of withstanding repeated changes in temperature with a plurality of individually movable supporting rolling elements on the plate-like supporting base upper surface whereby said rolling elements do not penetrate the pores and contaminate the cellular structure of the sponge and said rolling elements being made from a refractory material capable of withstanding a temperature to which the rolling elements are to be subjected; positioning the air dried sponge on top of the plurality of rolling elements supported on the supporting base to define an assembly; then placing the assembly of the supporting base, the rolling elements on the upper surface, and the air dried sponge supported on the rolling elements within a furnace; and subsequently heating the assembly to a temperature to remove the remaining liquid and the material of the sponge and to further sinter the particles together as the porous refractory shape without development

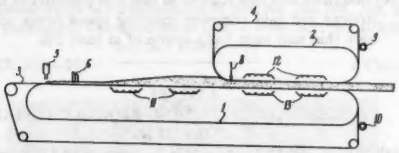
of cracks due to differential rates of expansion and contraction of the assembly.

4,332,754

METHOD FOR THE CONTINUOUS FABRICATION OF CELLULAR PRODUCTS OF THERMOHARDENABLE RESIN

Jean P. Meunier; Marie P. Barthe, both of Clermont De L'Oise; Serge Have, and Bernard Frumen, both of Nogent Sur Oise, all of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation of Ser. No. 945,066, Sep. 22, 1978, Pat. No. 4,252,515, which is a division of Ser. No. 795,914, May 11, 1977, abandoned. This application Mar. 13, 1980, Ser. No. 130,003
Claims priority, application France, May 12, 1976, 76 14330
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—45.5 24 Claims



1. A process for the manufacture of blankets or sheets of expanded phenolic resin having a hard skin on each side in which an expandable liquid mixture comprising a resol resin, a volatile liquid blowing agent and a surface active agent is deposited on a moving surface and expanded and hardened, which process comprises:

(a) depositing the expandable liquid mixture at a temperature of less than about 23° C. on an unheated moving surface with means by which said mixture becomes substantially uniform in thickness;

(b) expanding the substantially uniformly thick liquid mixture by heating said mixture to a temperature of about 30° C. to about 60° C. as it passes through a second zone on the moving surface, the outer surface of the upper side of the expanded mixture being sticky, maintaining the expanded mixture in said second zone until said sticky condition has disappeared, thereby signifying that the mixture is completely expanded and is partially hardened and until said mixture is characterized by a considerable hardening at its center as well as by a state of good flexibility of the outer surface of its upper side; and thereafter

(c) forming the completely expanded mixture between the moving surface and a second surface that is above and substantially parallel to the moving surface at a temperature higher than step (b) and completing the hardening of the expanded mixture.

4,332,755

SINTERED SILICON CARBIDE - ALUMINUM NITRIDE ARTICLES AND METHOD OF MAKING SUCH ARTICLES

Yorihiro Murata, North Tonawanda, N.Y., assignor to Kennecott Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 102,061, Dec. 10, 1979, abandoned, which is a continuation of Ser. No. 915,644, Jun. 15, 1978, abandoned. This application Dec. 19, 1980, Ser. No. 218,589
Int. Cl.³ C04B *35/56, 35/58*
U.S. Cl. 264—65 17 Claims

1. A method of producing a co-sintered silicon carbide - aluminum nitride product which comprises the steps of:

(a) forming a mixture of finely-divided silicon carbide, aluminum nitride, and carbon, or a carbon source material,

(b) shaping said mixture into an initial green body by cold pressing,

(c) crushing and reforming the initial green body into a second green body,

(d) sintering the second green body under substantially pressureless conditions in an inert atmosphere at a temperature between about 1900° and about 2250° C., and

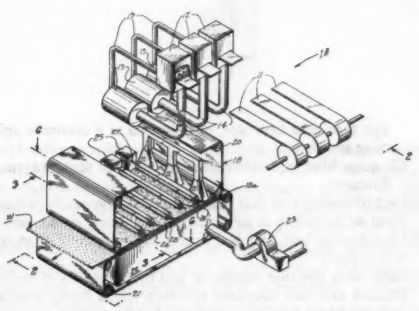
(e) recovering a co-sintered silicon carbide - aluminum nitride product having a density of at least 75 percent of the theoretical density of silicon carbide.

4,332,756

METHOD FOR THE MANUFACTURE OF FIBROUS WEBS

William C. Bean, Larsen, and Thomas M. Tao, Neenah, both of Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 105,897, Dec. 21, 1979, Pat. No. 4,268,235. This application Sep. 15, 1980, Ser. No. 187,074
Int. Cl.³ B28B *1/08*
U.S. Cl. 264—70 5 Claims



1. An improved method for uniformly dry laying a fibrous web on a linearly, unidirectionally moving forming wire, comprising the steps of:

applying a pressure differential transversely of the plane of said forming wire;

disposing a fiber distributor screen above said forming wire;

linearly, unidirectionally moving said screen in the recited direction of movement of said forming wire;

delivering fibers onto said moving screen for passage therethrough of said fibers onto said moving forming wire; and

imparting oscillatory movements to said fibers substantially in the plane of, and transversely of the recited direction of movement of, said screen to uniformly distribute said fibers passing through said screen onto said forming wire to dry lay said fibrous web.

4,332,757

PROCESS FOR CONTINUOUS FILAMENT YARN WITH WOOL-LIKE HAND

Lawrence E. Blackmon, Foley, Ala.; John R. Dees, Pensacola, Fla.; Darrell A. Kelly, Milton, Fla.; Wayne T. Mowe, and Jing-Peir Yu, both of Pensacola, Fla., assignors to Fiber Industries, Inc., Charlotte, S.C.

Continuation-in-part of Ser. No. 155,261, Jun. 2, 1980, abandoned, which is a continuation of Ser. No. 947,687, Oct. 2, 1978, abandoned. This application Oct. 31, 1980, Ser. No. 202,549
Int. Cl.³ D02G *1/20*
U.S. Cl. 264—103 9 Claims

1. A process for producing a self-crimping yarn comprising first and second types of filaments, said process comprising:

(a) spinning said first type of filament by

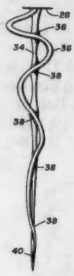
(1) forming a first plurality of melt spun filaments by merging molten polyester streams traveling at different

extrusion speeds to form thick and thin regions in the merged streams out of phase with other merged streams.

(2) quenching said first plurality of merged streams into said first type of filaments having thick and thin regions along their lengths and out of phase from filament to filment;

(b) spinning said second type of filament by

(1) extruding other streams of molten polymer of fiber-forming molecular weight from orifices selected to give filaments having round cross section with lower shrinkage than said first type of filaments at a common spinning speed; and



(2) quenching said other streams into said second type of filament;

(c) withdrawing said first and said second types of filaments from said streams at said common spinning speed; and

(d) combining said first and said second types of filaments into a yarn;

(e) said thick and thin regions in said first plurality of molten streams and said common spinning speed being selected such that said yarn has a crimp pf at least 2%.

4,332,758

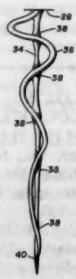
METHOD FOR PRODUCING POLYESTER WOOL-LIKE YARN

Lawrence E. Blackmon, Foley, Ala.; John R. Dees, and Wayne T. Mowe, both of Pensacola, Fla., assignors to Fiber Industries, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 972,131, Dec. 21, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,205

Int. Cl.³ D02G *1/20*

U.S. Cl. 264—103 **10 Claims**



1. A process for producing a self-crimping yarn comprising first and second types of filaments, said process comprising:

(a) spinning said first of filament type by

(1) forming a first plurality of melt spun filaments by merging molten polyester streams traveling at different extrusion speeds to form thick and thin regions in the merged streams out of phase from other merged streams;

(2) quenching said first plurality of merged streams into said first type of filaments having thick and thin regions along their lengths and out of phase from filament to filament;

(b) spinning said second of filament type by

(1) extruding other streams of molten polymer of fiber forming molecular weight from helical orifices selected to give filaments with helical cross-sections and lower shrinkages than said combined filaments at a given common spinning speed; and

(2) quenching said other streams into filaments;

(c) withdrawing said first and said second types of filaments from said streams at said common spinning speed; and

(d) combining said first and said second types of filaments into a yarn;

(e) said thick and thin regions in said first plurality of molten streams and said common spinning speed being selected such that said yarn has a crimp of at least 2%.

4,332,759

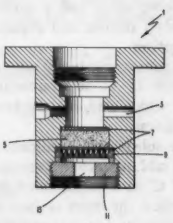
PROCESS FOR EXTRUDING LIQUID CRYSTAL POLYMER

Yoshiaki Ide, North Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 15, 1980, Ser. No. 169,013

Int. Cl.³ B29D *3/02*

U.S. Cl. 264—108 **63 Claims**



1. An improved process for extruding liquid crystal polymer to form shaped articles comprising the steps of:

(a) providing a fluid stream of liquid crystal polymer wherein said stream has a flow pattern comprising substantial shear flow;

(b) converting the flow of said fluid stream of liquid crystal polymer to a substantially elongational flow in the substantial absence of shear flow; and

(c) extruding said fluid stream of liquid crystal polymer to form a shaped article having the polymer molecules oriented substantially parallel to the flow direction and exhibiting enhanced mechanical properties.

4,332,760

DIRECT PRODUCTION OF ELASTOMER COMPOUND FROM REACTOR SOLUTION

David R. Warfel, Exton, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 30, 1981, Ser. No. 248,138

Int. Cl.³ B02C *18/00*; C08L *9/00*; B28B *3/00*

U.S. Cl. 264—143 **2 Claims**

1. A method of preparing oil-extended elastomer in pellet form consisting essentially of

a. polymerizing from 25 to 55% by weight of a monovinyl aromatic compound and 45 to 75% by weight of a conjugated diene in an inert solvent to form a base thermoplastic elastomer of formula A—B—(B—A)$_n$, where A is a

monovinyl aromatic compound block, B is a conjugated diene block, and n is an integer from 1 to 20;

b. adding to the elastomer-solvent mixture an extender oil, and dispersing the resulting mixture;

c. pumping the dispersion to a devolatilizing extruder;

d. extruding the mixture into a strand while removing the solvent from the mixture; and

e. chopping the resulting strands to form pellets suitable for use in shoe sole molding applications.

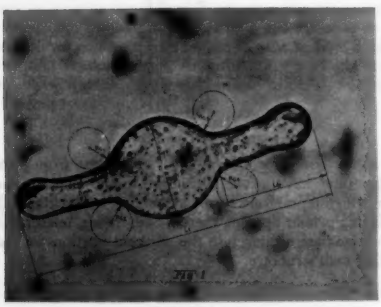
4,332,761
PROCESS FOR MANUFACTURE OF TEXTILE FILAMENTS AND YARNS

Bobby M. Phillips; James O. Casey, Jr., and Dale R. Gregory, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 36,712, May 7, 1979, Pat. No. 4,245,001, which is a continuation of Ser. No. 834,034, Sep. 16, 1977, abandoned, which is a continuation of Ser. No. 763,258, Jan. 26, 1977, abandoned. This application Oct. 2, 1980, Ser. No. 193,063

Int. Cl.³ B29H *7/18*

U.S. Cl. 264—147 **6 Claims**



1. Process for draw-fracturing textile yarn, said process comprising uniformly drawing to a preselected level of textile utility a yarn comprising filaments having a wing-body interaction defined by

$$\left(\frac{(D\max - D\min)D\min}{2Rc^2}\right)\left(\frac{Lw}{D\min}\right)^2 \geqq 10$$

where the ratio of the width of said filament to the width of said wing (L_T/Dmin) is ≦30, Dmax is the thickness or diameter of the body of the cross-section, Dmin is the thickness of the wing for essentially uniform wings and the minimum thickness close to the body when the thickness of the wing is variable, R_c is the radius of curvature of the intersection of the wing and body, Lw is the overall length of an individual wing and L_T is the overall length of the cross section, stabilizing said yarn to a specific gravity of at least 1.35; fracturing the wing portion of said filament utilizing fracturing means, and taking up said yarn.

4,332,762
PROCESS FOR PREPARING A SPREADABLE ACRYLIC FIBER TOW

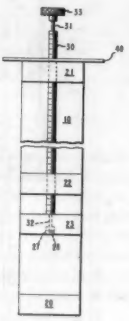
Charles E. Lynch, Camden, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 681,592, Apr. 29, 1976, abandoned. This application Dec. 10, 1979, Ser. No. 101,798

Int. Cl.³ D01D *5/22*

U.S. Cl. 264—168 **2 Claims**

1. A process for preparing a spreadable tow of highly entangled continuous acrylic filaments from a tow of 10,000 or more previously undried bicomponent acrylic filaments having a large difference in the hot water swellability of the components by drying the tow to a maximum water content of 3% by weight at a temperature below the hot wet glass transition temperature of the polymers in the filaments, wherein one component of the filaments is selected from the group consisting of polyacrylonitrile and mixtures of polyacrylonitrile and up to 20% by weight of a copolymer containing 90–98% by weight acrylonitrile units and 2–10% by weight units of styrenesulfonic acid, allyl-sulfonic acid, methallylsulfonic acid,



vinyl-sulfonic acid, or their metal, ammonium or amine salts, a vinyl pyridine, vinyl pyrrolidone, acrylamide, methacrylamide, hydroxymethylacrylamide or mixtures of any of these units and the other component is a copolymer containing 90–98% by weight acrylonitrile units and 2–10% by weight units of styrenesulfonic acid, allyl-sulfonic acid, methallylsulfonic acid, vinyl-sulfonic acid, or their metal, ammonium or amine salts, a vinyl pyridine, vinyl pyrrolidone, acrylamide, methacrylamide, hydroxymethylacrylamide or mixtures of any of these units.

4,332,763
METHOD OF MAKING A COSMETIC SUBSTANCE

Matthias Hempel, Eckental, and Werner Brüchert, Nuremberg, both of Fed. Rep. of Germany, assignors to Schwan-Stabilo Schwanhausser GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 154,932

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923080

Int. Cl.³ A61K *7/02*

U.S. Cl. 264—176 R **4 Claims**

1. A method for the production of a cosmetic stick comprising cold deformation molding a mixture comprising a fatty substance for the creation of a cream-like layer for application to the skin, a water soluble binding agent and an agent which emulsifies on the skin upon the addition of water, and thereafter removing water from the said molded mixture to such an extent that the stick so formed by the said cold deformation hardens into a solid structure.

4,332,764
METHODS FOR PRODUCING MELT-SPUN FILAMENTS

John R. Brayford, Charlotte, and Max L. Cardell, Shelby, both of N.C., assignors to Fiber Industries, Inc., New York, N.Y.

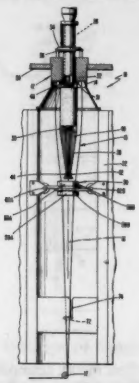
Filed Oct. 21, 1980, Ser. No. 199,321

Int. Cl.³ D01D *1/04*

U.S. Cl. 264—176 F **11 Claims**

1. In a melt-spinning process of the type wherein molten polymer is extruded downwardly through annularly arranged holes of a spinneret to form an annular group of filaments, quench gas is directed from within the filament group and outwardly therethrough, finish liquid is sprayed from within

the filament group and outwardly therethrough beneath the quench gas, the filaments are gathered and redirected at a lower guide means, and the filaments exhibiting vibration during travel from the spinneret to the lower guide means, the improvement comprising the step of passing the filaments through an upper annular guide means disposed around the filament group below the finish spray and above the lower guide means but no higher than the freeze point of the filaments such that the upper guide means is lubricated by the



finish spray and the filaments are contacted and acted inwardly upon by a surface of the upper guide means and deflected thereby, in mutually spaced annular relationship, toward a longitudinal axis defined by the filament group such that a diameter defined by the filament group passing through said upper guide means is smaller than a diameter defined by said filament group emerging from said spinneret, whereby the filaments are suppported between the spinneret and the lower guide means to reduce the amplitude of vibration of the filaments.

4,332,765

PROCESS FOR SPINNING HYDROPHILIC ACRYLIC FIBRES OF LOW DENSITY

Ulrich Reinehr; Toni Herbertz, both of Dormagen, and Hermann-Josef Jungverdorben, Grevenbroich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 962,959, Nov. 22, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,449

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752821

Int. Cl.³ D02G *3/00*

U.S. Cl. 264—206 **3 Claims**

1. A process for the production of hydrophilic core-jacket low-density filaments or fibres of polyacrylonitrile having a porousity of at least 50%, water retention capacity of at least 100%, and a mercury density of at most 0.7 g/cm^3 of a hydrophilic, filament-forming synthetic polyacrylonitrile which comprises dry spinning the polymer, there being added to the spinning solvent a substance which:

(a) has a higher boiling point than the spinning solvent used,

(b) is readily miscible with the spinning solvent and with water, and

(c) is a non-solvent for the polymer to be spun, the ratio by weight of polymer solids to non-solvent amounts to at most 2:1;

and, immediately after the filaments leave the spinning jet or at the latest at a time at which they have still not completely hardened, bringing the filaments into contact at a duct temperature of at most 140° C. with steam.

4,332,766

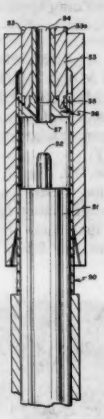
ONE-PIECE SHOTSHELL

Jack A. Erickson; Luke J. Davich, both of Anoka, and Richard W. Proulx, Forest Lake, all of Minn., assignors to Federal Cartridge Corporation, Minneapolis, Minn.

Filed Feb. 1, 1980, Ser. No. 117,580

Int. Cl.³ F42B *7/06*

U.S. Cl. 264—249 **28 Claims**



1. A method of producing a cartridge case from a thermoplastic tube having wall structure supporting at one end thereof an integral transverse base section with a longitudinally extending primer opening therein comprising, telescoping that transverse base section into the adjacent portions of that supporting wall structure.

4,332,767

METHOD FOR PRODUCING THERMOPLASTIC RESIN MOLDED ARTICLES

Minoru Kitanaka, and Zenji Izumi, both of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,833

Claims priority, application Japan, Dec. 28, 1978, 53-163937; Mar. 1, 1979, 54-24251; Mar. 1, 1979, 54-24252

Int. Cl.³ B29B *3/02*

U.S. Cl. 264—322 **14 Claims**

1. A method for producing thermoplastic resin molded articles which comprises heating a sheet of crystalline crosslinked polyamide or polyester resin, which is crosslinked to a degree of crosslinking of more than about 5% to a temperature higher than the melting point of said crosslinked resin and below the decomposition temperature of the same, transferring said heated sheet to a press mold and press molding said preheated sheet between a pair of press molds maintained at a temperature below the melting point of said crosslinked resin.

4,332,768

ARRANGEMENT FOR SUPPLYING METERED QUANTITIES OF REAGENT LIQUID TO THE TEST TUBES OF AN ANALYZING APPARATUS

Erling G. Berglund, Järfälla, Sweden, assignor to Clinicon AB, Bromma, Sweden

Filed Feb. 23, 1981, Ser. No. 237,076

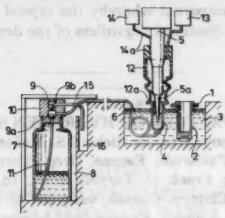
Claims priority, application Sweden, Mar. 11, 1980, 8001913

Int. Cl.³ G01N *1/14, 1/18*

U.S. Cl. 422—63 **8 Claims**

1. An arrangement in an automatically operating analyzing apparatus for supplying metered quantities of liquid reagent to a test-tube, comprising a cup for liquid reagent; a pump capable of drawing liquid into a suction pipe and re-dispensing a given

volume of liquid from said suction pipe, said pump being movable between a position above the reagent cup and a position above the test-tube and arranged to be lowered, in said first position, into the reagent cup for withdrawing reagent liquid therefrom and in said second position to dispense reagent liquid into the test-tube; a storage vessel for reagent liquid, said vessel being connected to said cup through a line having its one



end projecting into the liquid in the storage vessel and its other end discharging into the cup, and including a check valve arranged to permit a liquid flow in only one direction towards the reagent cup; means for generating a sub-pressure in said cup; and a level sensing means for sensing the level of liquid in said cup and rendering said sub-pressure generating means inoperative when the vessel of liquid in said cup exceeds a given highest level.

4,332,769

DISPOSABLE TITRATION DEVICE

Gordon A. Rampy, Warrenton, and Henry B. Castaneda, Woodbridge, both of Va., assignors to Chemetrics, Inc., Warrenton, Va.

Filed Sep. 10, 1980, Ser. No. 185,978
Int. Cl.³ G01N *31/16*
U.S. Cl. 422—75 **4 Claims**

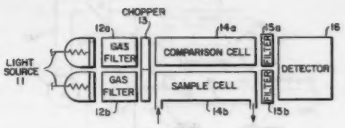
1. A disposable device for onetime quantitative chemical analysis of a fluid comprising a transparent tube of such cross-section that the volume of its contents can be readily measured and of sufficient wall strength to permit ready handling, and having one end thereof drawn to a sealed frangible tip, said tube being evacuated and containing a predetermined quantity of a liquid reagent for the desired analysis, a connector tightly fitting over the frangible tip of sufficient length for ready immersion into the fluid being analyzed, the connector being of material readily deformable by finger pressure of the analyst to permit ready breaking of said frangible tip, said connector having within it a rigid bead of a size suitable for effecting a leak-tight seal in the connector except when a passage is induced by deformation of the deformable connector, thereby producing a positive self-closing valve in the connector.

4,332,770

APPARATUS FOR ANALYZING THE CARBON CONTENT OF METALS

Kozo Ishida, and Akimichi Kira, both of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Oct. 21, 1980, Ser. No. 199,217
Claims priority, application Japan, Nov. 17, 1979, 54-149665
Int. Cl.³ G01N *31/12*
U.S. Cl. 422—78 **2 Claims**



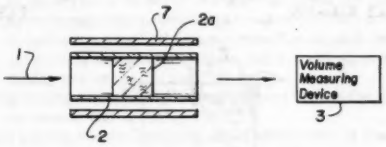
1. An apparatus for analyzing the carbon content of a metallic sample by utilizing a furnace for burning the metallic sample to be analyzed in a current of oxygen so as to generate a gas and comprising a single non-dispersive infrared analyzer having a single detector means for detecting both carbon monoxide and carbon dioxide, said single detector means exhibiting substantially the same sensitivity to both carbon monoxide and carbon dioxide in said gas generated in said furnace.

4,332,771

METHOD AND DEVICE FOR DETERMINING THE ALCOHOL CONTENT OF A PERSON'S BREATHING

Kurt Leichnitz, Gross Gronau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 121,888, Feb. 15, 1980, Pat. No. 4,227,251.
This application Feb. 2, 1981, Ser. No. 230,871
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1979, 2910778
Int. Cl.³ G01N *1/22*
U.S. Cl. 422—84 **3 Claims**

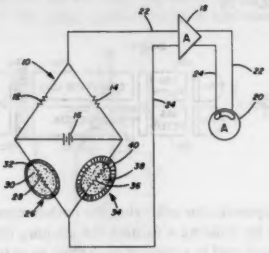


1. A device for determining the alcohol content of air exhaled by a person comprising a sampling tube, a silica gel in said sampling tube capable of retaining alcohol from a gas passed therethrough, cooling means for cooling said tube and said silica gel to about 0° to 5° C., a measuring device for measuring the quantity of gas passed through said sampling tube, means for directing exhaled air through said sampling tube and to said measuring device to a predetermined measured quantity, heating means for heating said sampling tube and said silica gel to a temperature of 150° C. to 200° C. after the measured quantity is obtained, an alcohol testing tube connectable to said sampling tube, said testing tube having material therein for indicating the percentage of alcohol in the air passing therethrough, and pump means connected to said testing tube and said sampling tube for drawing flushing air through said sampling tube and into said testing tube.

4,332,772
PORTABLE GAS DETECTOR

Frank X. McNally, Venetia, Pa., assignor to National Mine Service Company, Pittsburgh, Pa.

Division of Ser. No. 142,026, Apr. 21, 1980. This application Jun. 12, 1981, Ser. No. 272,945
Int. Cl.³ G01N *27/16*
U.S. Cl. 422—97 2 Claims

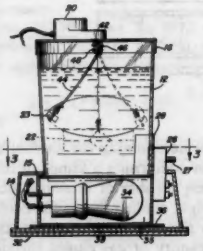


1. In an apparatus for detecting a combustible gas which comprises a Wheatstone bridge circuit having (a) a detector element comprising an electrically conducting member coated with a refractory and having on the surface of said refractory a catalyst for the oxidation of said gas, said detector element constituting one leg of said bridge, and (b) a reference element comprising an electrically conducting member coated with a refractory, said reference element constituting a second leg of said bridge, whereby upon catalytic oxidation of said gas an electrical signal approximately proportional to the amount of said gas present at the detector element is produced, the improvement which comprises a coating of cobalt oxide deposited upon the refractory coating of said reference element, whereby the occurrence of spurious signals by the Wheatstone bridge circuit due to causes other than the presence of a combustible gas is greatly reduced, if not completely eliminated.

4,332,773
APPARATUS FOR GROWING CRYSTALS

Delmer H. Kimberling, 10322 Schnapf La., Newburgh, Ind. 47630

Filed Sep. 5, 1980, Ser. No. 184,336
Int. Cl.³ B01D *91/02*
U.S. Cl. 422—109 7 Claims

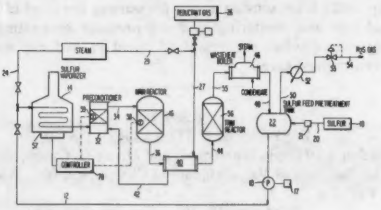


1. An apparatus for growing crystals primarily for use by hobbyists and for classroom instruction comprising: a container for holding a mixture of solvent and solute, means to rotate a crystal in said solution, a heat source placed exterior of said container and off-center and adjacent to the bottom of said container, and temperature control means placed exterior of said container to maintain the temperature of the solution relatively constant during the period of growth of said crystal, said rotating means comprising a motor containing a drive shaft and a flexible elongated crystal support means secured to the exterior of said drive shaft for holding and maintaining the crystal within the solution, the longitudinal axis of said crystal support means being substantially parallel to said drive shaft, said crystal support means being adjustably attached to said drive shaft whereby the placement of said crystal in said solution can be vertically adjusted during the growth of the crystal, said heat source being an electric light bulb and said container being transparent whereby the crystal growing in said solution can be observed regardless of the density of the solution.

4,332,774
MANUFACTURE OF HYDROGEN SULFIDE

Ian Drum, Calgary, Canada; Richard S. Madenburg, Boise, Id.; Douglas M. Paulsrude, Eugene, Oreg.; Carroll H. Sherman, Monaca, Pa.; Frank G. Turpin, Boise, Id., and Gerry A. Wheatcroft, Calgary, Canada, assignors to Home Oil Company Limited, Calgary, Canada and Morrison-Knudsen Company, Inc., Boise, Id.

Filed Aug. 19, 1980, Ser. No. 179,528
Int. Cl.³ C01B *17/16;* C22B *17/00, 21/00;* C01G *9/00*
U.S. Cl. 422—111 6 Claims



1. Apparatus for producing hydrogen sulfide by reaction of sulfur with a gaseous sulfur reductant feedstock selected from various sulfur reductant feedstocks including hydrogen, hydrocarbons, carbon-containing gases such as carbon monoxide, and mixtures thereof, comprising in combination

an interconnected system for combining sulfur, sulfur reductant feedstock and steam for reaction to produce hydrogen sulfide,

a source of gaseous sulfur reductant feedstock having a predetermined temperature,

vaporizer and superheater means including separately controllable heat source means for vaporizing liquid sulfur and superheating such sulfur vapors,

means for supplying liquid sulfur at a predetermined temperature,

means for delivering such liquid sulfur into the vaporizer and superheater means,

means for quantitatively controlling delivery of liquid sulfur to the vaporizer and superheater means,

means for supplying steam at a predetermined temperature,

means for introducing steam into the vaporizer and superheater means to be superheated with the sulfur vapors,

means for introducing steam with the sulfur reductant feedstock,

means for delivering sulfur vapors, steam and sulfur reductant feedstock into a vessel means for premixing sulfur vapors, steam and sulfur reductant feedstock before introduction into a catalytic reaction zone,

catalytic reaction means connected to such premixing vessel means for receiving and reacting sulfur vapors, steam and sulfur reductant feedstock to produce reaction product including hydrogen sulfide,

means for controlling such heat source means to control heat input into the vaporizer and superheater means to balance

the heat input into the catalytic reaction means from the steam, sulfur and sulfur reductant feedstock,

means for cooling reaction product,

means for delivering reaction product from the catalytic reaction means to the means for cooling reaction product, and

means for delivering cooled reaction product including hydrogen sulfide from the means for cooling reaction product.

4,332,775

HYDROGEN GENERATOR UTILIZING SOLAR ENERGY TO DISSOCIATE WATER

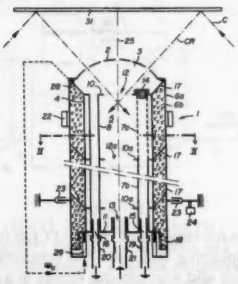
Pierre Genequand, Moillebeau-Parc, and Daniel M. Gross, Carouge, both of Switzerland, assignors to Battelle Memorial Institute, Columbus, Ohio

PCT No. PCT/CH78/00036, § 371 Date Jul. 3, 1980, § 102(e) Date Jun. 30, 1980, PCT Pub. No. WO80/00957, PCT Pub. Date May 15, 1980

PCT Filed Nov. 3, 1978, Ser. No. 200,618

Int. Cl.³ G05D *16/02*; B01J *19/12*; C01B *13/00, 3/06*

U.S. Cl. 422—112 **18 Claims**



1. A gas generator for producing hydrogen and oxygen from thermally dissociated water vapor, comprising

a heat-insulated rotary tubular reactor (1) heated by solar energy in incoming radiation (CR) from the sun, comprising

an inner chamber (5),

inlet means (13) for providing water in the chamber,

an axial upper end wall (2) facing the incoming radiation and having the form of a transparent cap for allowing the radiation to enter the inside of the reactor,

a tubular side wall (4) and a flat lower end wall (11) made of refractory material capable of absorbing a substantial portion of the collected radiation so as to raise, during operation, the temperature in the inner chamber to a level sufficient to dissociate the water therein to form hydrogen and oxygen,

means for separating the hydrogen from the oxygen, comprising a plurality of substantially vertically oriented refractory tubes (7,8) of which at least one (7) has a closed upper end (14) but a partially porous wall (7*a*) for letting the hydrogen preferentially penetrate therein, and another tube (8) has a solid wall and an open upper end for collecting the oxygen, and

a lower end (15,16) of each tube being connected to means for evacuating and storing the gases formed and collected therein.

4,332,776

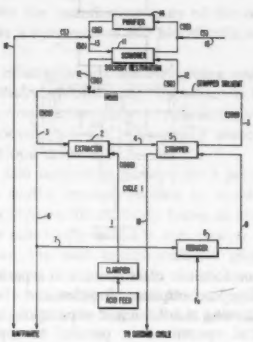
EXTRACTANT SOLVENT RESTORATION IN THE PROCESS FOR RECOVERY OF URANIUM FROM PHOSPHORIC ACID

Regis R. Stana, Lakeland, Fla., assignor to Wyoming Mineral Corporation, Lakewood, Colo.

Filed Nov. 8, 1979, Ser. No. 92,866

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—10 **9 Claims**



1. A process of purifying organic extractant solvent in a uranium recovery process, comprising the steps of:

(A) passing phosphoric acid solution containing uranium values and contaminants into an extractor means and contacting it with a water-immiscible, organic extractant solvent composition, having a uranium extraction coefficient of at least about 2.0, to extract uranium values and contaminants from the acid solution, and then

(B) passing the organic solvent, containing uranium values and contaminants, into a stripper means, to strip uranium values from the organic solvent, and to provide a stripped organic solvent stream still containing contaminants and having a lowered uranium extraction coefficient value, and then

(C) passing from about 5 vol. % to about 35 vol. % of the stripped organic solvent stream from the stripper means into a water scrubber means and contacting it with water, containing no more than about 3 vol. % phosphoric acid as an impurity, to scrub contaminants from the organic solvent and raise its uranium extraction coefficient value, to provide a scrubbed water-immiscible, organic extractant solvent composition stream and a water stream containing contaminants, and then

(D) passing the scrubbed organic solvent back to the extractor means, and

(E) passing the contaminated water stream into at least one purification means, to provide a purified water stream which is fed back into the scrubber means.

4,332,777

HYDROMETALLURGICAL TREATMENT OF METALLURGICAL DUST

Richard Pazdej, Maizieres-les-Metz, France, assignor to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed Jun. 6, 1980, Ser. No. 157,645

Claims priority, application France, Jun. 15, 1979, 79 15623

Int. Cl.³ C01G *9/06, 21/20*

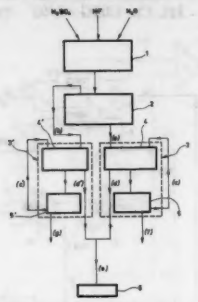
U.S. Cl. 423—98 **5 Claims**

1. Process for the hydrometallurgical treatment of metallurgical dust containing useful elements such as iron, zinc and lead, in which said elements are selectively separated for recovery, comprising in order the steps of:

(1) leaching said dust by attack of sulphuric acid solution

diluted to dissolve said zinc into sulphate form and to form insoluble particles of lead sulphate without affecting said iron, thereby forming a solid fraction and a mainly liquid fraction;

(2) performing a solid-solid separation of said solid fraction



by granulometric classification to separate said iron from very fine lead sulphate particles; and

(3) performing a solid-liquid separation composed of two identical operations in parallel to separate from said mainly liquid fraction, respectively, iron particles and lead sulphate particles.

4,332,778

NON-EVAPORATIVE PROCESS FOR THE PRODUCTION OF ALUMINUM SULFATE

Robert W. Hobday, Wilmington, Del., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 30, 1980, Ser. No. 164,485

Int. Cl.[3] C01G *15/00;* C01F *7/74;* C22B *21/00;* C01F *7/26*

U.S. Cl. 423—132 9 Claims

1. In a process for producing drier aluminum sulfate wherein an alumina-bearing substance containing insoluble impurities is contacted with sulfuric acid in a reaction zone heated to a temperature sufficient to form an alum liquor containing about 6 to about 11% alumina as Al_2O_3 and insoluble impurities and wherein the heated alum liquor is separated from the insoluble impurities and wherein the separated heated alum liquor is further treated to produce drier aluminum sulfate, the improvement which consisting essentially of admixing the separated heated alum liquor with a substance containing aluminum trihydrate and additional sulfuric acid in amounts sufficient to produce aluminum sulfate substance consisting essentially of $Al_2(SO_4)_3$ and containing about 17% by weight aluminum as Al_2O_3, while maintaining the temperature of the admixing in the range of about 120° to about 155° C.

4,332,779

PHOSPHORIC ACID FILTRATION PROCESS

Michael J. Thibodeau, Lakeland, Fla., and James S. Balcerski, Maplewood, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 24, 1980, Ser. No. 209,805

Int. Cl.[3] C01B *25/16*

U.S. Cl. 423—321 R 9 Claims

1. A process for the filtration of phosphoric acid produced by the wet-process comprising initially adding to the prefilt phosphoric acid an effective amount of a cationic flocculant and a dispersant said dispersant being selected from the group consisting of polyacrylates, polysulfonates polyphosphates, and sulfonated polycondensates wherein the ratio of the flocculant to dispersant is from about 0.1:1.0 to 10.0:1.0, respectively, conditioning the prefilt phosphoric acid and thereafter filtering the phosphoric acid to remove impurities and concentrate the acid.

4,332,780

PREPARATION OF CIS-DIAMMINE DIODO PLATINUM (II)

Richard N. Rhoda, Suffern, N.Y., and Jeffrey N. Crosby, Worcester, England, assignors to MPD Technology Corporation, Wyckoff, N.J.

Continuation-in-part of Ser. No. 65,553, Aug. 16, 1979, Pat. No. 4,273,755. This application Mar. 9, 1981, Ser. No. 241,946

Int. Cl.[3] C01G *55/00*

U.S. Cl. 423—413 9 Claims

1. A process for preparing a cis-diamminediiodoplatinum(II) complex of high purity and in high yield from potassium tetraiodoplatinum(II) by a method comprising adding an aqueous solution of ammonium hydroxide to an aqueous dispersion of potassium tetraiodoplatinum(II), said tetraiodo compound having the formula K_2PtI_4, under a controlled gradually rising temperature profile while controlling the ammonium hydroxide addition so that the pH does not exceed about 7.5.

4,332,781

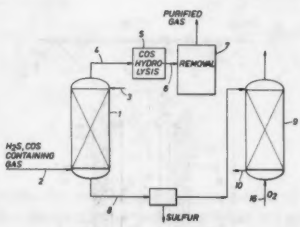
REMOVAL OF HYDROGEN SULFIDE AND CARBONYL SULFIDE FROM GAS-STREAMS

Charles A. Lieder, and Carl H. Deal, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 29, 1980, Ser. No. 220,487

Int. Cl.[3] C01B *17/05;* B01D *53/34*

U.S. Cl. 423—573 G 34 Claims



1. A process for removal of H_2S and COS from a sour gaseous stream containing H_2S and COS comprising:

(a) contacting said sour gaseous stream in a contacting zone with an aqueous reactant solution, the solution comprising an effective amount of an oxidizing reactant, to produce a gas stream containing COS and an aqueous admixture containing sulfur and a reduced reactant;

(b) contacting the gas stream containing COS with a catalyst for the hydrolysis of COS, in the presence of water, and under conditions to react COS and water, and producing a gas stream containing CO_2 and H_2S;

(c) and removing the H_2S from the gas stream.

4,332,782

METHOD OF PRODUCING PSEUDOBOEHMITE

Julius Scherzer, Anaheim, and Anh-Thu Liu, Santa Ana, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Jul. 28, 1980, Ser. No. 173,064

Int. Cl.[3] C01F *7/34*

U.S. Cl. 423—628 5 Claims

1. A process for producing crystalline pseudoboehmite having a peptization index or less than 60 which comprises reacting an aluminum sulfate with ammonium hydroxide in a water solution to a terminal pH of in excess of 9, and forming alumina hydrate gel in a mother liquor, aging said mixture of gel and mother liquor to convert said gel to crystalline pseudoboehmite and maintaining said mother liquor at a pH of about 8 or higher during said aging and separating mother liquor from the pseudoboehmite, in which said aging or said separation is under quiescent conditions.

4,332,783

PROCESS FOR IMMUNOLOGIC DETERMINATION TESTS

Walter Pernice, and Hans-Harald Sedlacek, both of Marburg an der Lahn, Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Aug. 15, 1979, Ser. No. 66,793

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2836046

Int. Cl.[3] G01N *33/54, 33/58, 33/60*

U.S. Cl. 424—1 10 Claims

1. A method for the immunological determination of a immuno-complex, comprising an antigen and an antibody, in a liquid containing said immuno-complex, which method comprises

(a) incubating said liquid containing said immuno-complex with a first reagent bound to a carrier, said first reagent being specific for an antigenic determinant of the antigen in said immuno-complex and being present in amount sufficient to fix said immuno-complex;

(b) separating the carrier from said liquid containing said immuno-complex and incubating it in a solution of a second reagent, said second reagent being specific for an antigenic determinant of the antibody in said immuno-complex and being present in an amount sufficient to fix said immuno-complex; and

(c) separating the carrier from said solution of the second reagent and determining the amount of bound or unbound second reagent.

4,332,784

DUAL ISOTOPE ASSAYS

Geoffrey F. W. Smith; Ralph A. J. Stevens, and Benjamin Jacoby, all of Buckinghamshire, England, assignors to The Radiochemical Centre Limited, Buckinghamshire, England

Filed Jan. 30, 1980, Ser. No. 116,776

Claims priority, application United Kingdom, Feb. 6, 1979, 7904036

Int. Cl.[3] G01N *33/56;* G01T *1/00;* G01N *33/60*

U.S. Cl. 424—1 9 Claims

1. A method of testing for thyroid function by performing a radio-immunoassay of a sample by a dual isotope technique comprising the steps:

(a) mixing the sample to be assayed with a version of a first thyroid component selected from the group T3, T4, TSH and TGB labelled with Se-75 and a version of a second thyroid component selected from the said group labelled with another radioactive isotope, and with an antibody to the said first component and an antibody to the said second component, the amount of antibody being in each case insufficient for reaction with all the thyroid component and labelled version thereof that are present,

(b) incubating the mixture to effect reaction between the thyroid components and the labelled versions thereof, and their respective antibodies,

(c) separating the fractions of the thyroid components plus the labelled versions thereof that are bound to the antibodies from the fractions not so bound,

(d) measuring the radioactive concentrations of the bound or the unbound fractions, and

(e) using the measurements to calculate the concentrations of the thyroid components in the sample being assayed.

4,332,785

IMMUNOASSAY FOR MEASUREMENT OF RETICULOCYTES, AND IMMUNOREACTIVE REAGENTS FOR USE THEREIN

Robert H. Allen, Englewood, and Paul A. Seligman, Denver, both of Colo., assignors to University Patents, Inc., Norwalk, Conn.

Filed Apr. 9, 1980, Ser. No. 138,785

Int. Cl.[3] G01N *33/56, 33/58*

U.S. Cl. 424—1 13 Claims

1. A method for the quantitative assay of the reticulocyte content present in a specimen of red blood cells, comprising the steps of:

(a) forming an incubation mixture comprising said specimen and a reticulocyte-specific antibody which is immunoreactive with proteinaceous material substantially associated with reticulocytes but not substantially associated with mature red blood cells;

(b) incubating said incubation mixture for a period of time sufficient to enable immunoreaction to occur, whereby said reticulocyte-specific antibody forms an immunoreaction product selectively with the reticulocyte portion of said specimen via said immunoreactive proteinaceous material; and

(c) quantitatively measuring the reticulocyte portion of said specimen based upon the extent of said immunoreaction.

4,332,786

METHOD AND COMPOSITION FOR VITAMIN B-12 ASSAY

Michael D. Cabelli, Watertown, and Ernest V. Groman, Brookline, both of Mass., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 15, 1980, Ser. No. 150,022

Int. Cl.[3] G01N *33/54, 33/58, 33/60*

U.S. Cl. 424—1 12 Claims

1. In a method for determining vitamin B-12 wherein a sample which contains the vitamin bound to sample binding proteins is heat treated to release the vitamin, the improvement comprising contacting the sample binding protein during the heat treatment with a denaturing agent having the formula $(R)_2NC(A)N(R)_2$, wherein R is hydrogen or lower alkyl and A is oxygen or hydroxyl.

4,332,787

ASSAY FOR BETA-ADRENERGIC ANTAGONISTS AND ANTIBODY THEREFOR

Charles J. Homcy, and Edgar Haber, both of Weston, Mass., assignors to The Massachusetts General Hospital, Boston, Mass.

Filed Jun. 23, 1980, Ser. No. 162,081

Int. Cl.[3] G01N *33/56, 33/58;* C07G *7/00*

U.S. Cl. 424—1 14 Claims

1. The process for determining the concentration of a material selected from the group consisting of an aryloxypropylamine beta-adrenergic antagonist or an active metabolite of said antagonist and mixtures thereof in a sample which comprises:

a. mixing the sample with an antibody for said material, said antibody being formed from an antigen comprising a conjugate of an immunogenic protein linked by a diazo moiety to (a) an aryloxypropylamine beta-adrenergic antagonist or (b) a derivative of said antagonist having beta-adrenergic activity which derivative includes an aryloxypropylamine moiety,

b. determining the extent of the binding reaction between said antibody and said material, and,

c. comparing the measured extent of binding of an unknown with a known quantitative relationship between extent of binding and concentration of said material.

4,332,788

METHOD OF DETERMINING AN ANTIGEN, ANTIBODY FOR ANTIGEN-ANTIBODY COMPLEX INCLUDING FIXING THE AGGREGATES THEREOF

Ei Mochida, Tokyo; Hiroyuki Shinkai, Kawagoe; Takashi Kudo, Tokyo, and Toshiyuki Sugawara, Urawa, all of Japan, assignors to Mochida Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1980, Ser. No. 152,390

Claims priority, application Japan, Jun. 5, 1979, 54/70371

Int. Cl.[3] **G01J** *3/42;* **G01N** *21/75, 31/06, 33/52*

U.S. Cl. 424—12 **16 Claims**

1. In a measuring method for determining an antigen, antibody, or antigen-antibody complex or conjugate comprising the steps of (1) causing an antigen-antibody reaction between (a) a sensitized carrier particle which is formed by binding (I) at least one substance selected from the group consisting of an antigen, antibody, and antigen-antibody complex and conjugate to (II) a carrier composed of an insoluble finely divided particle so that at least two units of said substance are bound to the particulate carrier and (b) at least one substance selected from the group consisting of an antigen, antibody, and antigen-antibody complex and conjugate to be determined and capable of causing an immunological reaction with said substance (I) bound to said sensitized carrier particle; and (2) measuring the absorbancy or turbidity of the reaction mixture formed in step (1) by irradiating said reaction mixture with a ray having a wavelength of from about 320 to about 2400 nm, wherein the measuring method is to determine the quantity or concentration of aggregate formed by said antigen-antibody reaction, the improvement which comprises fixing the aggregate formed by said antigen-antibody reaction by adding a fixing compound to the reaction mixture formed in the reaction system of step (1).

4,332,789

PHARMACEUTICAL UNIT DOSAGE FORMS

Arthur R. Mlodozeniec, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 640,655, Dec. 15, 1975, abandoned. This application Aug. 24, 1977, Ser. No. 827,284

Int. Cl.[3] **A61K** *9/70*

U.S. Cl. 424—27 **10 Claims**

1. A solid pharmaceutical unit dosage form comprising a single sheet of an edible, therapeutically inert web having a fibrous composition comprising one or more fibrous materials and one or more non-fibrous modifiers therefor, said sheet having a composition comprising one or more medicaments uniformly loaded to the surface thereof in a finely particulate form, said sheet being fabricated into said unit dosage forms so as to have substantially no medicament loaded to an outer surface thereof, said unit dosage form being sealed so as to completely internalize said medicament.

4,332,790

MICROCAPSULE CONTAINING A MICROORGANISM AND A PROCESS FOR ITS PRODUCTION

Tomaso Sozzi, Lausanne; Alfred Schrenk, Orbe, and Marcel Buhler, Tolochenaz, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Nov. 23, 1979, Ser. No. 96,771

Claims priority, application Switzerland, Dec. 5, 1978, 12392/78

Int. Cl.[3] **A61K** *39/02, 9/50, 9/42*

U.S. Cl. 424—38 **8 Claims**

1. A process for the production of microcapsules of fat containing microorganisms of the genus Lactobacillus and/or Bifidobacterium and/or other geni of the intestinal flora comprising forming a dispersion of the microorganisms in molten fat having a melting point of from 40° to 60° C. with from 10^7 to 10^{10} individuals or germs of Lactobacillus and/or Bifidobacterium per gram of fat; spraying the dispersion into the upper portion of a chamber under a pressure of from 3 to 6 bars, said chamber having an upper moderate-temperature zone of at least one meter in height maintained at a temperature between −10° C. and the melting temperature of the fat and a lower low-temperature zone; and collecting the solidified microcapsules.

4,332,791

TOOTHPASTE ACTIVE AGAINST PLAQUE COMPRISING A COPPER COMPOUND AND A SILICA POLISHING AGENT

Helmut Raaf, Bad Schwalbach; Dieter Becker, Darmstadt-Wixhausen; Franz Frosch, Taunusstein; Helmut Harth, Mainz, and Helmar R. Wagner, Darmstadt, all of Fed. Rep. of Germany, assignors to Blendax-Werke R. Schneider GmbH & Co., Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,405

Claims priority, application European Pat. Off., Apr. 29, 1980, 80102304.5

Int. Cl.[3] **A61K** *7/16, 7/18, 7/24, 33/34*

U.S. Cl. 424—52 **14 Claims**

1. An aqueous toothpaste composition containing at least one water-soluble copper compound and at least one polishing agent, the major part of said polishing agent being silicon dioxide.

4,332,792

INSECT ATTRACTANT

Gustave K. Kohn, Palo Alto, and Richard L. Baughn, San Francisco, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Jul. 14, 1980, Ser. No. 168,862

Int. Cl.[3] **A01N** *25/00*

U.S. Cl. 424—84 **10 Claims**

1. A process for the manufacture of an insect attractant which comprises pyrolyzing a mixture comprising N-methylnicotinic acid and starch syrup, said mixture containing from about 0.1 to 50 percent, by weight, of said N-methylnicotinic acid, and said pyrolyzing being conducted by heating said mixture at about 100° to 250° C. for about 5 minutes to 120 minutes.

7. In a method for the control of insects using an attractant, the improvement which comprises using the pyrolyzate prepared according to claim 1 as the attractant.

8. The method of claim 7 wherein the insect is a cockroach.

10. The method of claim 8 wherein the mixture contains from about 5 to 15 percent of said acid.

4,332,793

METHOD OF RECOVERING CELL ANTIGEN AND PREPARATION OF FELINE LEUKEMIA VACCINE THEREFROM

Richard G. Olson, London, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio

Filed Dec. 18, 1979, Ser. No. 104,789

Int. Cl.[3] **A61K** *39/12*

U.S. Cl. 424—89 **7 Claims**

1. A vaccine for the prevention of disease caused by Feline leukemia virus (FeLV) which comprises: protease enzyme-inhibited, substantially virus-free, cell-free, in vitro produced feline leukemia neoantigens comprising

(a) a FOCMA-type neoantigen which is capable of reading with FOCMA-antisera and which evokes an immune response in cats by the appearance of antibodies thereto; and

(b) a FeLV virion gp70 neoantigen which is capable of reacting with gp70-antisera and which evokes an immune response in cats by the appearance of antibodies thereto,

wherein said protease enzyme inhibition has been effected by at least one of the following techniques:

(i) adding to said neoantigens an effective porportion of a protease enzyme inhibition;

(ii) heating said neoantigens to a temperature effective to inhibit protease enzymes therein;

(iii) changing the pH of said neoantigens to a value effective to inhibit protease enzymes therein;
(iv) changing the ionic strength of said neoantigens to a value effective to inhibit protease enzymes therein.

4,332,794

6''-DEOXYDIBEKACIN, 4'',6''-DIDEOXYDIBEKACIN AND 1-N-AMINOACYL DERIVATIVES THEREOF, AND THE PRODUCTION OF THESE NEW COMPOUNDS

Hamao Umezawa, Tokyo, and Shinichi Kondo, Yokohama, both of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,630
Claims priority, application Japan, Sep. 19, 1979, 54/119323
Int. Cl.[3] A61K *31/71;* C07H *15/22*
U.S. Cl. 424—180 9 Claims

7. An antibacterial composition comprising as the active ingredient 6''-deoxydibekacin, 4'',6''-dideoxydibekacin, 1-N-(L-4-amino-2-hydroxybutyryl)-6''-deoxydibekacin or 1-N-(L-4-amino-2-hydroxybutyryl)-4'',6''-dideoxydibekacin or a pharmaceutically acceptable acid addition salt thereof, in an antibacterially effective amount to inhibit the growth of bacteria, in combination with a carrier for the active ingredient compound.

4,332,795

INFLAMMATION-PREVENTING PHARMACEUTICAL COMPOSITION OF ORAL ADMINISTRATION

Miklos Ghyczy; Adorjan Erdös, both of Cologne; Günter Heidemann, Geilenkirchen-Tripsrath, and Götz Ritzmann, Cologne, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie. GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,449
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856333
Int. Cl.[3] A61K *31/40, 31/685*
U.S. Cl. 424—199 14 Claims

1. A method of alleviating inflammation in a mammal comprising orally administering to said mammal an effective inflammation-alleviating amount of a pharmaceutical composition comprising a phospholipid and a non-steroidal inflammation-preventing indole in a molar ratio ranging from about 0.1:1 to about 20:1, respectively.

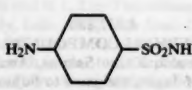
4,332,796

POTENTIATED SULFONAMIDE INJECTABLE PREPARATION

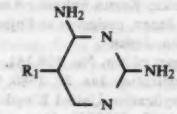
Mario A. Los, Buenos Aires, Argentina, assignor to Laboratorios Bago S.A., Buenos Aires, Argentina

Filed Jun. 11, 1980, Ser. No. 158,398
Claims priority, application Argentina, Feb. 19, 1980, 279998
Int. Cl.[3] A61K *9/42, 31/505, 31/625*
U.S. Cl. 424—229 6 Claims

1. A pharmaceutical composition, which comprises;
in admixture,
(a) from 1 to 20 parts by weight of an alkali metal sulfonamide, said sulfonamide having the structural formula:



wherein R is selected from the group consisting of 6-methoxy-3-pyridazinyl, 6-ethoxy-3-pyridazinyl, 5,6-dimethoxy-4-pyrimidinyl, 2,6-dimethoxy-4-pyrimidinyl, 2,6-dimethyl-4-pyrimidinyl, 2-pyrimidinyl, 4,6-dimethyl-2-pyrimidinyl, 5-methoxy-2-pyrimidinyl, 3,4-dimethyl-5-isoxazolyl, 5-methyl-3-isoxazolyl, 4,5-dimethyl-2-oxazolyl and 2-quinoxalinyl; and
(b) one part by weight of microcrystals of a potentiator for said sulfonamide, said potentiator being a 5-substituted 2,4-diaminopyrimidine of the formula:



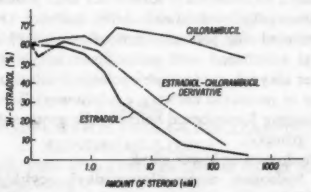
wherein R_1 is selected from the group consisting of 3,4,5-trimethoxybenzyl, 3,4-dimethoxy-6-methylbenzyl and 3,4-dimethoxybenzyl groups, said microcrystals being coated with a mixture of a phospholipid selected from the group consisting of phosphatidylcholine, both naturally occurring and synthetically prepared, phosphatidic acid, lysophosphatidylcholine, phosphatidylserine, phosphatidylethanolamine, sphingolipid, phosphatidylglycerol, spingomyelin, cardiolipin, glycolipid, ganglioside, cerebrosides and lecithin; and
a non-ionic surface-active agent;
the proportion ratio between potentiator:phospholipid:surfactant being between 100:1:30 and 300:1:70.

4,332,797

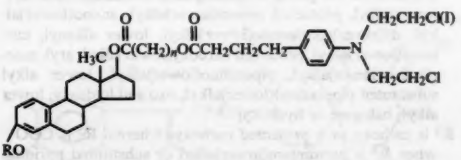
CHLORAMBUCIL DERIVATIVES

Kiro Asano; Humio Tamura, both of Ibaraki; Hiromitsu Tanaka, Tokyo, and Satoru Enomoto, Fujisawa, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 62,789, Aug. 1, 1979, Pat. No. 4,261,910.
This application Sep. 12, 1980, Ser. No. 186,487
Claims priority, application Japan, Aug. 14, 1978, 53/98795; Dec. 8, 1978, 53/152175
Int. Cl.[3] A01N *45/00;* A61K *31/56*
U.S. Cl. 424—238 18 Claims



1. Chlorambucil derivatives having the formula



wherein R represents a hydrogen atom or an acyl group and n is 1 or 2.

7. A composition of matter consisting essentially of from 0.001% to 90% of the compounds of claim 1 as active ingredient and a pharmaceutically acceptable carrier.

4,332,798

7-AMINO-THIA-DIAZOLE OXYIMINO DERIVATIVES OF CEPHEM AND CEPHEM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 108,161, Dec. 28, 1979, abandoned. This application Jan. 30, 1980, Ser. No. 116,984

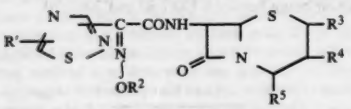
Claims priority, application United Kingdom, Dec. 29, 1978, 50334/78; Oct. 12, 1979, 7935538; Denmark, Dec. 21, 1979, 5542/79

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ A61K *31/545;* C07D *501/56*

U.S. Cl. 424—246 23 Claims

1. 7-Substituted-3-cephem and cepham-4-carboxylic acid of the formula:



where R^1 is amino or a protected amino;

R^2 is hydrogen; carbamoyl; lower alkanoyl; lower alkoxycarbonyl; aroyl; ar(lower)alkanoyl; cyclo(lower)alkyl(lower)alkanoyl; ar(lower)alkoxycarbonyl; (lower)alkanesulfonyl; arenesulfonyl; aryl; alkaryl; aryl and alkaryl substituted in the aryl nucleus with 1 to 3 substituent(s) selected from the group consisting of halogen, lower alkoxy, nitro, halo(lower)alkyl, and protected carboxy; substituted lower alkyl selected from the group consisting of ar(lower)alkyl, lower alkylthio(lower)alkyl, halo(lower)alkyl, aryloxy(lower)alkyl, cyano(lower)alkyl, protected carboxy(lower)alkyl, di(lower)alkylcarbamoyl(lower)alkyl, lower alkoxy(lower)alkoxy(lower)alkyl, lower alkanesulfonyl(lower)alkyl, protected amino(lower)alkyl, amino(lower)alkyl, carboxy(lower)alkyl, ar(lower)alkyl substituted with protected carboxy, ar(lower)alkyl substituted with carboxy, ar(lower)alkyl substituted with protected amino(lower)alkyl, and ar(lower)alkyl substituted with amino(lower)alkyl; lower alkenyl; lower alkynyl; cycloalkyl; cycloalkyl substituted with carboxy or protected carboxy; cyclo(lower)alkenyl; or S or O containing 5-membered heterocyclic group substituted with oxo group(s);

R^3 is hydrogen or lower alkyl;

R^4 is hydrogen; acyloxy(lower)alkyl; acylthio(lower)alkyl; pyridinium(lower)alkyl; pyridinium(lower)alkyl substituted with carbamoyl; heterocyclicthio(lower)alkyl; heterocyclicthio(lower)alkyl substituted with 1 to 3 substituent(s) selected from the group consisting of lower alkyl, hydroxy(lower)alkyl, protected amino(lower)alkyl, amino(lower)alkyl, di(lower)alkylamino(lower)alkyl, lower alkenyl, carboxy(lower)alkyl, protected carboxy(lower)alkyl, aryl, morpholino(lower)alkyl, piperidino(lower)alkyl, lower alkyl substituted piperazinyl(lower)alkyl, oxo and hydroxy; lower alkyl; halogen; or hydroxy;

R^5 is carboxy or a protected carboxy; wherein R^5 is COO^- when R^4 is pyridinium(lower)alkyl or substituted pyridinium(lower)alkyl; and the heavy solid line means single or double bond; and pharmaceutically acceptable salt thereof.

23. An antibacterial composition comprising an effective amount of a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,332,799

QUATERNARIES OF TERTIARY AMINO-SUBSTITUTED THIAZINES

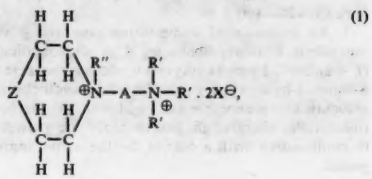
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 713,704, Aug. 12, 1976, Pat. No. 4,276,416. This application Jul. 7, 1980, Ser. No. 166,438

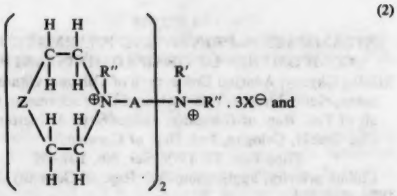
Int. Cl.³ A01N *43/84*

U.S. Cl. 424—246 8 Claims

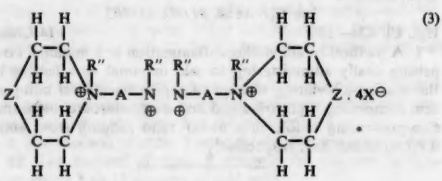
1. A process for inhibiting the growth of microorganisms in aqueous systems which comprises adding to said systems a microbiocidal amount of a quaternary of a tertiary amino-substituted thiazine having the formula selected from the group consisting of



(1)



(2)



(3)

where Z is SO or SO_2, A is alkylene having 2 to 10 carbon atoms, R' is alkyl or hydroxyalkyl, R'' is alkyl, alkenyl or alkynyl,

represents a cyclic diamine group and X is an anion selected from the group consisting of chloride, iodide, bromide, sulfate, sulfonate and carboxylate.

4,332,800

CEPHEM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

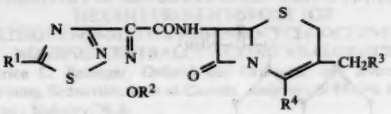
Continuation-in-part of Ser. No. 180,295, Aug. 22, 1980. This application Dec. 9, 1980, Ser. No. 214,785

Claims priority, application United Kingdom, Oct. 12, 1979, 7935538; South Africa, Oct. 1, 1980, 80/6068

Int. Cl.³ C07D *501/36*

U.S. Cl. 424—246 15 Claims

1. Cephem compounds comprising the syn isomer of the formula:

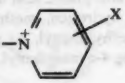


wherein

R^1 is amino or a protected amino group,

R^2 is lower alkyl of from 1 to 6 carbon atoms,

R^3 is a group of the formula



wherein

X is carbamoyl, and

R^4 is $-COO^-$, or

R^3 is dihydrotriazinylthio substituted with lower alkyl, oxo and hydroxy, and R^4 is carboxy or protected carboxy, and pharmaceutically acceptable salts thereof.

4,332,801

3-AMINOSYDNONIMINES, THEIR PREPARATION AND USE

Karl Schönafinger; Rudi Beyerle; Rolf-Eberhard Nitz, all of Frankfurt am Main; Piero A. Martorana, Bad Homburg, all of Fed. Rep. of Germany, and Volker Fiedler, Detroit, Mich., assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

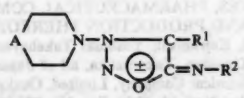
Division of Ser. No. 166,951, Jul. 8, 1980, Pat. No. 4,305,939. This application Feb. 10, 1981, Ser. No. 233,054

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930736

Int. Cl.³ C07D *417/04;* **A61K** *31/38, 31/41;* **C07D** *417/14*

U.S. Cl. 424—246 **22 Claims**

1. A compound which, in its free-base form, is a pharmacologically-active and physiologically-acceptable 3-amino-sydnonimine of the formula



wherein

R^1 is —H or halo;

R^2 is —H, —NO, $-COR^3$ or SO_2R^4;

R^3 is —H; optionally-substituted aliphatic hydrocarbyl having from 1 to 6 carbon atoms and any substituent of which is alkoxy with from 1 to 6 carbon atoms or carbocyclic aryloxy with from 6 to 12 carbon atoms; cycloaliphatic hydrocarbyl having from 5 to 8 ring carbon atoms; optionally-substituted carbocyclic aryl with from 6 to 12 ring carbon atoms and 0, 1, 2 or 3 substituents, any of which is, independently, halo, alkyl with from 1 to 4 carbon atoms or alkoxy with from 1 to 4 carbon atoms; araliphatic hydrocarbyl with from 7 to 13 carbon atoms; alkoxy with from 1 to 6 carbon atoms; carbocyclic aryloxy with from 6 to 12 ring carbon atoms; heteroaryl with 5 or 6 ring members, at least 2 of which are carbon atoms, at most one of which is a sulfur atom, at most one of which is an oxygen atom and at most three of which are nitrogen atoms, and wherein any ring member is a carbon atoms, a sulfur atom, an oxygen atom or a nitrogen atom; or alkoxycarbonyl with from 2 to 7 carbon atoms;

A is >S and

R^4 is aliphatic hydrocarbyl with from 1 to 6 carbon atoms; optionally-substituted carbocyclic aryl with from 6 to 12 ring carbon atoms, any substituent of which is methyl or chloro; or dialkylamino, each alkyl of which has, independently, from 1 to 4 carbon atoms.

18. A pharmaceutical composition useful for reducing blood pressure, in unit-dosage form and having from 0.1 to 50 milligrams of a pharmacologically-acceptable compound according to claim **1** in combination with carrier therefor.

4,332,802

11-OXO-11H-PYRIDO[2,1-b]QUINAZOLINE-2-CARBOXYLIC ACID AND SALTS THEREOF, ANTIALLERGIC COMPOSITIONS CONTAINING IT AND METHODS OF SUPPRESSING ALLERGIC REACTIONS WITH IT

Kurt Schromm, Ingelheim am Rhein; Anton Mentrüp, Mainz-Kastel; Ernst-Otto Renth, Ingelheim am Rhein, and Armin Fügner, Gau-Algesheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 146,620, May 5, 1980, abandoned, which is a continuation of Ser. No. 64,010, Aug. 6, 1979, abandoned, which is a continuation of Ser. No. 953,753, Oct. 23, 1978, abandoned, which is a continuation of Ser. No. 853,034, Nov. 16, 1977, abandoned, which is a division of Ser. No. 750,725, Dec. 15, 1976, Pat. No. 4,083,980. This application Nov. 5, 1980, Ser. No. 204,226

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557425

Int. Cl.³ A61K *31/505;* **C07D** *487/04*

U.S. Cl. 424—251 **3 Claims**

1. 11-Oxo-11H-pyrido[2,1-b]quinazoline-2-carboxylic acid or a non-toxic, pharmacologically acceptable salt thereof.

3. The method of suppressing allergic reactions in warm-blooded animals, which comprises perorally administering to said animal an effective antiallergic amount of a compound of claim **1**.

4,332,803

BENZANILIDE DERIVATIVE

Robert F. Mayol, and Richard E. Gammans, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Sep. 18, 1980, Ser. No. 188,184

Int. Cl.³ A61K *31/445;* **C07D** *211/34*

U.S. Cl. 424—267 **5 Claims**

1. 4-Hydroxy-3-methoxy-N-{2-[2-(1-methyl-2-piperidinyl)ethyl]phenyl}benzamide when in purified pharmaceutically acceptable form.

4,332,804

9-[2-(3-INDOLYL)ETHYL]-1OXA-4,9-DIAZASPIRO[5.5]UNDECAN-3-ONES

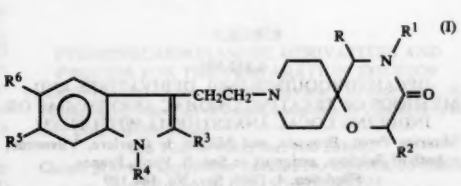
Robin D. Clark, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Mar. 23, 1981, Ser. No. 246,459

Int. Cl.³ A61K *27/00*

U.S. Cl. 424—248.57 **20 Claims**

1. A compound of the formula



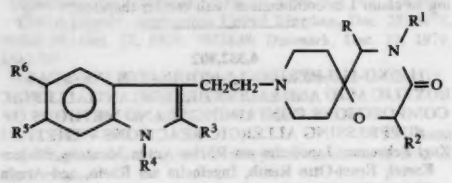
(I)

wherein:

R, R^1, R^2, R^3, and R^4 are independently hydrogen or lower alkyl of one to four carbon atoms; and

R^5 and R^6 are independently hydrogen, lower alkyl of one to four carbon atoms or lower alkoxy of one to four carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

18. A pharmaceutically composition comprising 5 to 95% by weight of a compound of the formula

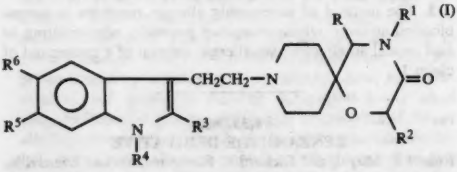


or a pharmaceutically acceptable acid addition salt thereof, wherein:

R, R^1, R^2, R^3, and R^4 are independently hydrogen, or lower alkyl of one to four carbon atoms;

R^5 and R^6 are independently hydrogen, lower alkyl of one to four carbon atoms or lower alkoxy of one to four carbon atoms; in admixture with 90 to 10% of a pharmaceutically acceptable, non-toxic carrier.

19. A method for treating and/or preventing hypertension, congestive heart failure, arrhythmia, migraine, vasospastic disorders and asthma in a mammalian subject comprising administering to said subject a therapeutically effective amount of a compound of the formula



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein:

R, R^1, R^2, R^3, and R^4 are independently hydrogen or lower alkyl of one to four carbon atoms; and

R^5 and R^6 are independently hydrogen, lower alkyl of one to four carbon atoms or lower alkoxy of one to four carbon atoms or a pharmaceutical composition containing such compound as an active ingredient.

4,332,805

DECAHYDROQUINOLINOL DERIVATIVES AND METHODS OF TREATING CARDIAC ARRYTHMIAS OR INDUCING LOCAL ANAESTHESIA WITH THEM

Maurice Prost, Brussels, and Michel de Claviere, Vilvoorde, both of Belgium, assignors to Sanofi, Paris, France

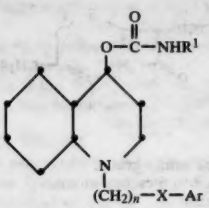
Filed Sep. 4, 1980, Ser. No. 184,129

Claims priority, application France, Sep. 19, 1979, 79 23289

Int. Cl.³ A61K *31/47*; C07D *215/22*

U.S. Cl. 424—258 **17 Claims**

1. A decahydroquinolinol compound of the formula:



and pharmaceutically acceptable acid addition salts thereof, in which R^1 represents hydrogen, methyl, ethyl, n-propyl, n-butyl or 3-chloro-4-methylphenyl, Ar represents 4-fluorophenyl, 4-bromophenyl or 4-cyanophenyl, X represents oxygen, and n is 3.

14. A pharmaceutical or veterinary composition for treatment of cardiac arrhythmias comprising, as essential active ingredient, at least one decahydroquinolinol compound according to claim **1**, in association with a pharmaceutical carrier or excipient.

15. Method of treating cardiac arrhythmias of various origins and in particular arrhythmias due to myocardial infarction in a host in need of such treatment which method comprises the administration to said host of an effective dose of at least one decahydroquinolinol derivative according to claim **1**.

17. Method of inducing local anaesthesia in a host in need thereof which method comprises the administration to said host of an effective dose of at least one decahydroquinolinol derivative according to claim **1**.

4,332,806

ANTITUMOR AND IMMUNOSUPPRESIVE 4-CARBAMOYL IMIDAZOLIUM-5-OLATE DERIVATIVES, PHARMACEUTICAL COMPOSITION AND PRODUCTION THEREOF

Toshio Atsumi, Kawanishi; Yoshiaki Takebayashi, Toyonaka, and Takao Kiyohara, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

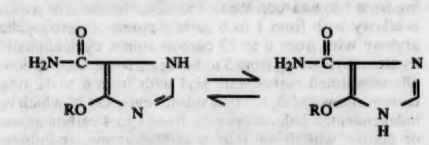
Filed Nov. 12, 1980, Ser. No. 205,980

Claims priority, application Japan, Nov. 12, 1979, 54-146741

Int. Cl.³ A61K *31/415*; C07D *233/90*

U.S. Cl. 424—273 R **9 Claims**

1. A compound of the formula



wherein R is adamantoyl substituted with 1-3 substituents selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, lower alkanoyloxy, aroyloxy, halogen, acetamido, nitro, an azide group, trifluoromethyl, or phenyl which may be substituted with nitro, halogen, lower alkyl or lower alkoxy.

9. An immunosuppressant composition which comprises an immunosuppressive amount of a compound of claim **1** as an active ingredient and a pharmaceutically acceptable carrier or diluent.

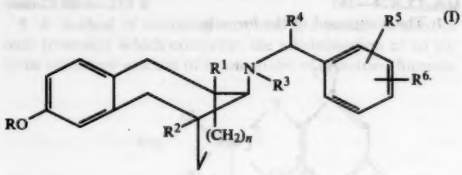
4,332,807

N-SUBSTITUTED-BENZYL-11-ENDO-AMINO-5,6,7,8,9,10-HEXAHYDRO-2-HYDROXY (OR METHOXY)-6,9-METHANOBENZOCYCLOOCTENE (OR NONENE) CENTRALLY-ACTING ANALGESICS

Patrice C. Belanger, Dollard des Ormeaux, and Robert N. Young, Senneville, both of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 26, 1981, Ser. No. 228,449
Int. Cl.³ A61K *31/40, 31/13, 31/275;* C07C *87/28*
U.S. Cl. 424—274 22 Claims

1. A compound of the formula:



(I)

where

R is hydrogen or methyl;

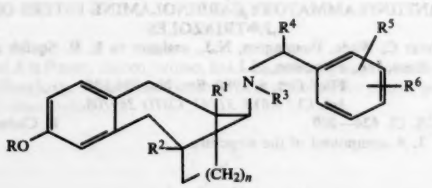
R^1, R^2 and R^4 are each independently selected from the group consisting of (1) hydrogen; and (2) C_{1-4}alkyl;

R^3 is selected from the group consisting of (1) hydrogen; (2) C_{1-4}alkyl; (3) C_{1-4}alkenyl; (4) C_{3-6}cycloalkyl; (5) C_{3-4}cycloalkyl C_{1-4}alkyl; (6) C_{3-6}cycloalkenyl; (7) C_{3-4}cycloalkenyl C_{1-4}alkyl; (8) phenyl; and (9) a methylene bridge attached to the phenyl moiety so as to form a dihydro isoindole structure with the nitrogen atom;

R^5 and R^6 are each independently selected from the group consisting of (1) hydrogen; (2) halo; (3) C_{1-4}alkyl; (4) C_{1-4}alkoxy; (5) amino, and mono- and di-C_{1-4}alkyl substituted amino; (6) cyano; (7) trifluoromethyl; (8) trifluoromethylthio; (9) C_{1-4}alkylthio; (10) C_{1-4}alkylsulfoxide; (11) C_{1-4}alkylsulfone; (12) hydroxy; and (13) phenyl; and

n is 1 or 2; and a pharmaceutically acceptable salt thereof.

20. A method of treating pain comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound of the formula:



(I.)

where

R is hydrogen or methyl;

R^1, R^2, and R^4 are each independently selected from the group consisting of (1) hydrogen; and (2) C_{1-4}alkyl;

R^3 is selected from the group consisting of (1) hydrogen; (2) C_{1-4}alkyl; (3) C_{1-4}alkenyl; (4) C_{3-6}cycloalkyl; (5) C_{3-4}cycloalkyl C_{1-4}alkyl; (6) C_{3-6}cycloalkenyl; (7) C_{3-4}cycloalkenyl C_{1-4}alkyl; (8) phenyl; and (9) a methylene bridge attached to the phenyl moiety so as to form a dihydro isoindole structure with the nitrogen atom;

R^5 and R^6 are each independently selected from the group consisting of (1) hydrogen; (2) halo; (3) C_{1-4}alkyl; (4) C_{1-4}alkoxy; (5) amino, and mono- and di-C_{1-4}alkyl substituted amino; (6) cyano; (7) trifluoromethyl; (8) trifluoromethylthio; (9) C_{1-4}alkylthio; (10) C_{1-4}alkylsulfoxide; (11) C_{1-4}alkylsulfone; (12) hydroxy; and (13) phenyl; and

n is 1 or 2; and a pharmaceutically acceptable salt thereof.

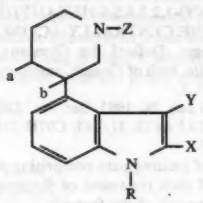
4,332,808

DOPAMINERGICALLY STIMULATING 4-SUBSTITUTED INDOLES

Jacques Guillaume, Sevran; Lucien Nedelec, LeRaincy; Claude Dumont, Nogent-sur-Marne, and Robert Fournex, Paris, all of France, assignors to Roussel Uclaf, Paris, France

Continuation-in-part of Ser. No. 154,507, May 29, 1980, abandoned. This application Dec. 31, 1980, Ser. No. 221,927
Claims priority, application France, Jun. 12, 1979, 79 14976; Oct. 24, 1980, 80 22819
Int. Cl.³ A61K *31/44, 31/445;* C07D *401/02*
U.S. Cl. 424—263 16 Claims

1. A compound selected from the group consisting of compounds of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms and aralkyl of 7 to 12 carbon atoms, X is selected from the group consisting of hydrogen and alkyl of 1 to 8 carbon atoms, Y is selected from the group consisting of hydrogen and halogen, Z is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, hydroxyalkyl of 1 to 8 carbon atoms, aryloxyalkyl of 7 to 12 carbon atoms, arylalkyl of 7 to 12 carbon atoms optionally substituted with at least one member of the group consisting of halogen, alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms, —OH, —CF_3, OCF_3, NO_2 and NH_2, cycloalkylalkyl of 4 to 12 carbon atoms, alkenyl of 3 to 8 carbon atoms and alkynyl of 3 to 8 carbon atoms, a and b may each be hydrogen or form a double bond or a is hydrogen and b is selected from the group consisting of —OH and alkoxy of 1 to 8 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

14. A method of inducing dopamingeric stimulating activity in a warm-blooded animal comprising administering to a warm-blooded animal a dopaminergically stimulating amount of at least one compound of claim 1.

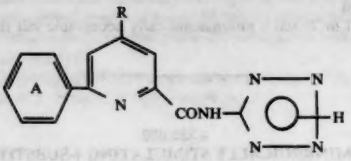
4,332,809

PYRIDINECARBOXAMIDE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Yasushi Honma, Ageo; Mikio Takeda, Urawa, and Kei Tsuzurahara, Ageo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Feb. 5, 1981, Ser. No. 231,787
Claims priority, application Japan, Feb. 15, 1980, 55-18008
Int. Cl.³ A61K *31/455;* C07D *401/12*
U.S. Cl. 424—266 7 Claims

1. An N-(5-tetrazolyl)-6-phenyl-2-pyridinecarboxamide derivative of the formula



wherein R is hydrogen, straight chain alkyl having 1 to 4 carbon atoms, straight chain alkoxy having 1 to 3 carbon atoms, or chlorine, and A is aminophenyl, methylaminophenyl, ethylaminophenyl, dimethylaminophenyl, or diethylaminophenyl, or a pharmaceutically acceptable salt thereof.

5. A composition for treatment of an anaphylaxis which comprises an amount of a compound of claim 1 such that, when administered to a warm blooded animal, it will provide an anti-anaphylactic amount of said compound.

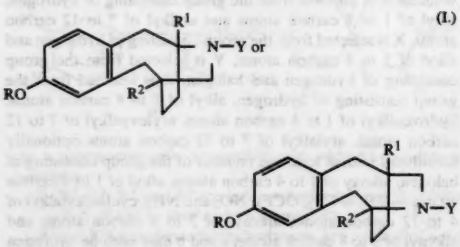
4,332,810

N-(SUBSTITUTED)-2,5-ETHANO-8-HYDROXY (OR METHOXY)-1,2,3,4,5,6-HEXAHYDRO-3 (OR 4)-BENZAZOCINE CENTRALLY-ACTING ANALGESICS

Patrice C. Belanger, Dollard des Ormeaux, and Robert N. Young, Senneville, both of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 26, 1981, Ser. No. 228,483
Int. Cl.[3] A61K *31/445;* **C07D** *221/22*
U.S. Cl. 424—267 **14 Claims**

12. A method of treating pain comprising administering to a patient in need of such treatment of therapeutically effective amount of a compound of the formula:



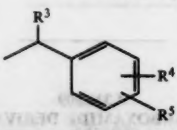
(I.)

where

R is hydrogen or methyl;

R^1, and R^2, are each independently hydrogen or C_{1-4} alkyl; and

Y is (a) C_{1-4}alkyl; (b) C_{1-4}alkenyl; (c) C_{3-4}cycloalkylmethyl; (d) phenyl C_{1-4}alkyl; or (e)



wherein:

R^3 is hydrogen or C_{1-4}alkyl; and

R^4 and R^5 are each independently selected from the group consisting of (1) hydrogen; (2) halo; (3) C_{1-4} alkyl; (4) C_{1-4} alkoxy; (5) amino, and mono- and di-C_{1-4} alkyl substituted amino; (6) cyano; (7) trifluoromethyl; (8) trifluoromethylthio; (9) C_{1-4} alkylthio; (10) C_{1-4} alkylsulfoxide; (11) C_{1-4} alkylsulfone; (12) hydroxy; and (13) phenyl;

or a pharmaceutically acceptable salt thereof.

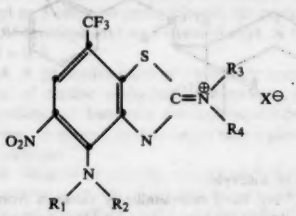
4,332,811

1,3-BENZODITHIOL-2-N,N-DIALKYLIMINIUM SALTS AND PESTICIDAL USE

Hansjakob Fäh, Ormalingen; Saleem Farooq, Ettingen; Alfred Grieder, Böckten, and Karl Scheuzger, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,352
Claims priority, application Switzerland, Mar. 26, 1980, 2373/80; Sep. 16, 1980, 6930/80
Int. Cl.[3] A01N *43/28, 43/40;* **C07D** *339/06, 409/04*
U.S. Cl. 424—267 **10 Claims**

1. The compound of the formula



wherein

R_1 and R_2 independently of one another are each hydrogen, C_1–C_5-alkyl, C_3–C_6-cycloalkyl, C_3-alkenyl, C_3–C_5-alkynyl or the radical $-(CH_2)_n-OR$, in which R is C_1–C_4-alkyl, and n is the number 2 or 3,

R_3 and R_4 independently of one another are each C_1–C_4-alkyl, or together they are the radical $-(CH_2)_4-$ or $-(CH_2)_5-$, and

$X^{\ominus}$ is the molar equivalent of an anion of an inorganic or organic acid.

10. A method for combating pests, particularly members of the order Acarina, especially mites which damage plants, which method comprises applying to said pests or to a locus desired to be protected from said pests a pesticidally effective amount of a compound according to one of claims 1 to 8.

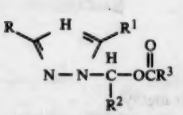
4,332,812

ANTIINFLAMMATORY CARBINOLAMINE ESTERS OF 1,2,4-TRIAZOLES

Peter C. Wade, Pennington, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 6, 1980, Ser. No. 194,186
Int. Cl.[3] A61K *31/41;* **C07D** *249/08*
U.S. Cl. 424—269 **11 Claims**

1. A compound of the structure



wherein

R is lower alkyl, cycloalkyl, cycloalkyl-lower alkyl, phenyl, phenyl-lower alkyl or phenyl substituted with halogen, CF_3, lower alkyl, lower alkoxy or lower alkylthio,

R^1 is lower alkyl, cycloalkyl or cycloalkyl-lower alkyl,

R^2 is H, lower alkyl, cycloalkyl, phenyl or phenyl substituted with halogen, CF_3, lower alkyl, lower alkoxy or lower alkylthio, and

R^3 is lower alkyl, cycloalkyl, phenyl or phenyl substituted with halogen, CF_3, lower alkyl, lower alkoxy or lower alkylthio, provided that where R^3 is lower alkyl R is other than lower alkyl.

9. A method for treating an inflammatory condition in a mammalian host, which comprises administering an effective amount of a compound as defined in claim 1.

4,332,813

ALLYLSULFOXIDE ENZYME INHIBITORS

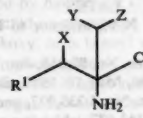
Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 66,603, Aug. 15, 1979, abandoned. This application May 7, 1980, Ser. No. 147,656

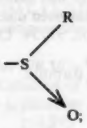
Int. Cl.³ A61K *31/415*; C07D *233/64*

U.S. Cl. 424—273 R 6 Claims

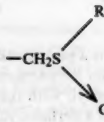
5. A method of inhibiting enzymes in a patient in need of such treatment which comprises the administration of an enzyme inhibitory amount of a compound of structural formula:



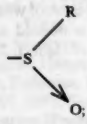
or a pharmaceutically acceptable salt thereof wherein X is hydrogen, fluoro, chloro, bromo, iodo, C_{2-4}alkanoyloxy, toluenesulfonyloxy, benzenesulfonyloxy, C_{1-3}alkansulfonyloxy, p-nitrobenzoyloxy, or



Y is hydrogen or



and Z is fluoro, chloro, bromo, iodo, C_{2-4}alkanoyloxy, toluenesulfonyloxy, benzenesulfonyloxy, C_{1-3}alkanesulfonyloxy, p-nitrobenzoyloxy, or



or Y and Z taken together form $=CH_2$; with the proviso that one and only one of X, Y and Z is a sulfoxide, and one and only one of X and Z is halo; wherein

R is

(1) phenyl
(2) nitrophenyl,
(3) cyanophenyl,
(4) C_{1-3}alkylsulfonylphenyl,
(5) C_{1-3}alkoxycarbonylphenyl,
(6) di(trifluoromethyl)phenyl,
(7) o-C_{1-3}alkylphenyl, or
(8) o,o-di(C_{1-3}alkyl)phenyl; and

R^1 is imidazol-4-yl.

4,332,814

TREATMENT OF DIARRHOEA

Peter M. Newsome, Worcester Park, and Noel A. Mullen, Cranleigh, both of England, assignors to Beecham Group Limited, England

Filed Aug. 11, 1980, Ser. No. 177,365

Claims priority, application United Kingdom, Aug. 23, 1979, 7929434

Int. Cl.³ A61K *31/415*, *31/165*

U.S. Cl. 424—273 R 7 Claims

1. A method for treating diarrhoea in livestock, which comprises administering to livestock an amount effective to treat diarrhoea of a compound which is an α-adrenergic agonist and which has vasoconstrictor activity and is further characterized by formula (I):

A—B—C (I)

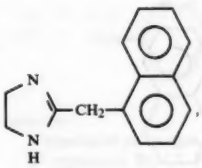
wherein

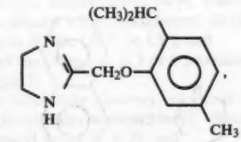
A is 2-imidazolinyl or guanidinyl;

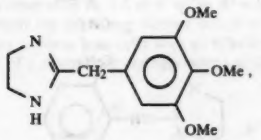
B is selected from a direct bond, $—CH_2—$, $—CH_2O—$, $—COCH_2—$ or —NH—; and

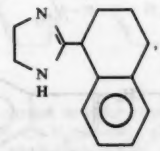
C is phenyl, naphthyl, tetrahydronaphthyl or benzothienyl, unsubstituted or substituted by C_{1-4} alkyl, C_{1-4} alkoxy, halogen or hydroxy, or a salt thereof.

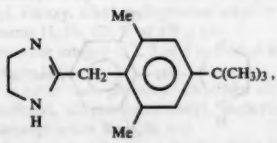
3. The method according to claim 1, wherein said compound of formula (I) is selected from the group consisting of











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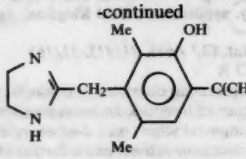

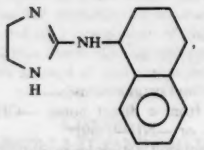

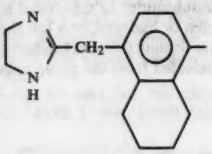

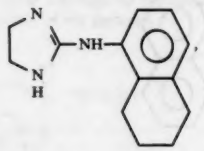

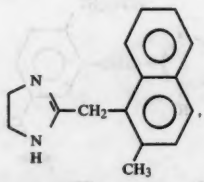

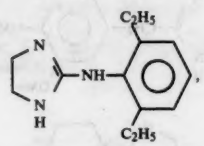

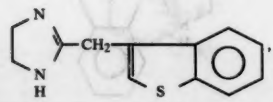

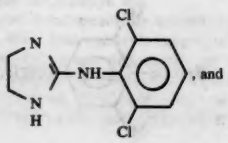

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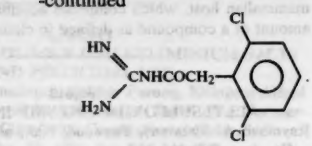


4,332,815

INSECTICIDAL PERHALOALKYLVINYLCYCLOPROPANECARBOXYLATES

John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 52,043, Jun. 25, 1979, Pat. No. 4,238,505, Ser. No. 37,796, May 10, 1979, abandoned, Ser. No. 55,212, Jul. 6, 1979, Pat. No. 4,235,927, and Ser. No. 65,257, Jul. 30, 1979, Pat. No. 4,243,677, which is a continuation of Ser. No. 927,198, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 870,973, Jan. 20, 1978, said Ser. No. 55,212, is a continuation-in-part of Ser. No. 12,266, Feb. 15, 1979, which is a continuation-in-part of Ser. No. 927,198, Jul. 24, 1978. This application Jul. 1, 1980, Ser. No. 164,991

The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.

Int. Cl.[3] **A01N** *37/08, 37/34;* **C07C** *69/743, 121/48*

U.S. Cl. 424—274 **20 Claims**

1. A compound of the formula

wherein one of Y and Z is a perhaloalkyl group having 1 to 4 carbon atoms and the other is hydrogen, halogen, lower alkyl, phenyl, phenylthio or benzyl, with the proviso that Y and Z may be combined to form a perhalocyclopentylidine group; R is —OR^1 in which R^1 represents an alcohol residue which forms an insecticidal ester when combined with chrysanthemic acid or a 3-(2,2-dihalovinyl)-2,2-dimethylcyclopropanecarboxylic acid; with the proviso that R^1 is other than phenoxybenzyl, α-cyanophenoxybenzyl or α-ethynyl-phenoxybenzyl.

18. A method for insect control which comprises applying to the locus where control is desired an insecticidally effective amount of the compound of claim **1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 13,** or **14.**

4,332,816

FUNGICIDAL 3-(N-CARBONYLAMINO)-PYRROLIDINE-2,5-DIONES

Robert Nyfeler, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

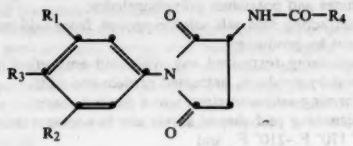
Filed Dec. 3, 1980, Ser. No. 212,471

Claims priority, application Switzerland, Dec. 7, 1979, 10871/79

Int. Cl.[3] **A61K** *31/40;* **C07D** *207/416*

U.S. Cl. 424—274 **21 Claims**

1. A compound of the formula



wherein R_1 is chlorine, bromine or nitro, R_2 is chlorine or bromine, R_3 is hydrogen or fluorine, R_4 is C_1–C_9alkyl which is unsubstituted or substituted by halogen or C_1–C_3alkoxy, or is C_2–C_7alkenyl, C_2–C_4alkynyl or C_3–C_6cycloalkyl, each of which is unsubstituted or substituted by halogen or phenyl, phenyl which is unsubstituted or substituted by halogen, nitro or C_1–C_4alkyl, or is X—R_5, wherein X is oxygen or sulfur and R_5 is C_1–C_6alkyl or C_3–C_6alkenyl, each of which is unsubstituted or substituted by halogen or C_1–C_3alkoxy, or is phenyl which is unsubstituted or substituted by halogen, nitro, C_1–C_3alkyl or C_1–C_3alkoxy, or is benzyl which is unsubstituted or substituted by halogen or nitro.

19. A method of controlling or preventing attack by phytopathogenic microorganisms at a locus, which comprises applying to said locus a microbicidally effective amount of a compound according to claim 1.

4,332,817

INSECTICIDAL COMPOSITIONS

Sol J. Barer, Clark, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 779,167, Mar. 18, 1977, Pat. No. 4,226,881, which is a continuation of Ser. No. 631,962, Nov. 14, 1975, abandoned. This application Jan. 24, 1980, Ser. No. 114,873

The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.

Int. Cl.³ A01N *31/00, 43/08, 47/10*

U.S. Cl. 424—285 **3 Claims**

1. An insecticidal composition comprising 1-naphthyl N-methyl carbamate at a level to provide less than an effective level of toxicity, and an alkanediol of up to 6 carbon atoms in an amount sufficient to enhance the activity of the carbamate to provide a level of toxicity which is significantly greater than the level of toxicity of the carbamate alone.

4,332,818

1,4;3,6-DIANHYDRO-2,5-DIAZIDO-2,5-DIDEOXY-HEXITOLS

Janos Kuszmann; Gabor Medgyes; Ferenc Andrasy, and Pal Berzsenyi, all of Budapest, Hungary, assignors to Egyt Gyógyszervegyészeti Gyár, Budapest, Hungary

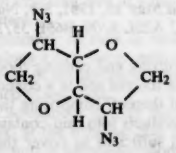
Filed Mar. 11, 1981, Ser. No. 242,709

Claims priority, application Hungary, Mar. 12, 1980, 580

Int. Cl.³ A61K *31/34;* **C07D** *493/04*

U.S. Cl. 424—285 **7 Claims**

1. A stereoisomeric 1,4;3,6-dianhydro-2,5-diazido-2,5-dideoxy-hexitol of the Formula



I

4,332,819

ANTIPHLOGISTIC AGENT AND ITS USE

Eugen Etschenberg, Cologne; Haireddin Jacobi, Leichlingen, and Wolfgang Opitz, Overath, all of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,146

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3011999

Int. Cl.³ A61K *31/265*

U.S. Cl. 424—301 **7 Claims**

1. A pharmaceutical composition in solid form containing as an active ingredient an antiinflammatory effective amount of S-benzyl 3-benzylthiopropionothioate, in admixture with an inert pharmaceutical carrier.

4,332,820

SUBSTITUTED BENZONITRILES HAVING ANTIVIRAL ACTIVITY

Lowell D. Markley, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

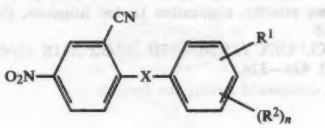
Continuation-in-part of Ser. No. 115,480, Jan. 25, 1980, Pat. No. 4,254,144. This application Dec. 29, 1980, Ser. No. 220,950

The portion of the term of this patent subsequent to Mar. 2, 1998, has been disclaimed.

Int. Cl.³ A61K *31/275;* **C07C** *121/60, 121/75, 121/78*

U.S. Cl. 424—304 **31 Claims**

1. A compound of the formula



wherein

X represents an oxygen or sulfur atom;

R^1 represents Br, Cl, F, phenoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl, benzoyl, alkoxy, alkyl, halogenated alkyl or acetyl;

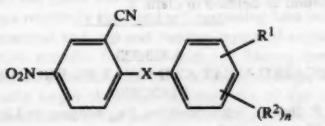
R^2 represents H, Br, Cl, F or CF_3; and

n represents the integer 1, 2, 3 or 4 provided that, when n is the integer 1;

(a) R^1 is other than phenoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl or benzoyl when R^2 is H; and

(b) R^1 is other than Br, Cl, or F when R^2 is H, Br, Cl or F.

17. A method for inhibiting viruses which comprises contacting viruses or virus host cells with an effective virus inhibiting amount of a compound corresponding to the formula



wherein

X represents an oxygen or sulfur atom;

R^1 represents Br, Cl, F, phenoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl, benzoyl, alkoxy, alkyl, halogenated alkyl or acetyl;

R^2 represents H, Br, Cl, F or CF_3; and

n represents the integer 1, 2, 3 or 4 provided that, when n is the integer 1;

(a) R^1 is other than phenoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl or benzoyl when R^2 is H; and

(b) R^1 is other than Br, Cl or F when R^2 is H, Br, Cl or F.

4,332,821

1-ACRYLOYL-3-(SUBSTITUTED)PHENYL UREAS

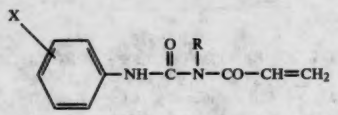
John W. Williams, Vallejo, Calif., and Frank C. Becker, Gurnee, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 48,853, Jun. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 875,253, Feb. 6, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,242

Int. Cl.³ A01N *47/28*

U.S. Cl. 424—322 5 Claims

1. The process of protecting substrates susceptible to attack by fungi against attack by common fungi consisting essentially in applying to such substrates an antifungally effective amount of a compound of the formula



wherein X is Or, SR or R with R being H or loweralkyl.

4,332,822

GUANIDINE DERIVATIVES

Terence J. Ward, Slough, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

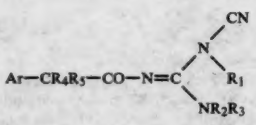
Filed Jan. 30, 1981, Ser. No. 229,902

Claims priority, application United Kingdom, Feb. 5, 1980, 8003848

Int. Cl.³ C07C *125/08;* C07D *207/30;* A61K *31/40, 31/165*

U.S. Cl. 424—324 8 Claims

1. A compound having the formula



wherein R_1 and R_2 are independently selected from hydrogen and lower alkyl or R_1 or R_2 taken together represent $-(CH_2)_n-$ where n is selected from 2 and 3; R_3, R_4 and R_5 are independently selected from hydrogen and lower alkyl; and Ar is selected from phenyl and pyrrol-1-yl groups that are substituted by one to two substituents, each substituent being independently selected from halogen, trifluoromethyl, lower alkyl, lower alkoxy and nitro.

7. A method of lowering blood pressure in a hypertensive subject, which comprises administering an effective amount of a compound as defined in claim 1.

4,332,823

FABRICATED MEAT AND MEAT BY-PRODUCTS AND PROCESS

Dennis P. Buemi, Schnecksvilles, Pa., assignor to Liggett Group Inc., Montvale, N.J.

Filed Apr. 7, 1980, Ser. No. 138,190

Int. Cl.³ A23L *1/31*

U.S. Cl. 426—272 9 Claims

1. A process for preparing fabricated meat and meat by-products comprising the sequential steps of:

(a) emulsifying meat or meat by-products;

(b) admixing a salt, with said emulsified meat or meat by-products, in a weight-percent proportion of 1.5–3% based on the weight of said fabricated product, said salt being present in proportion sufficient to extract salt soluble protein from said emulsified meat or meat by-products said salt being selected from the group consisting of sodium chloride, potassium chloride, sodium phosphate, potassium phosphate, sodium polyphosphates and potassium polyphosphates;

(c) extracting said salt soluble protein from said meat and meat by-products;

(d) admixing texturized soy with said emulsified meat or meat by-products, extracted protein and salt;

(e) forming said admixture into a desired shape;

(f) blanching said shaped admixture in a temperature range of 170° F.–210° F.; and

(g) thereafter maintaining the mositure content of said fabricated meat and meat by-products in the range of up to about 70%,

the weight-percent proportions of said ingredients being:

meat and meat by-products: 77–92%

texturized soy: 8–20%.

4,332,824

INTERMEDIATE-MOISTURE FROZEN FOODS

Marvin L. Kuhn, Williamsville, and Kuttikandathil E. Eapen, Kenmore, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Division of Ser. No. 24,127, Mar. 26, 1979, Pat. No. 4,199,604. This application Apr. 16, 1980, Ser. No. 140,790

The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.

Int. Cl.³ A23L *2/00*

U.S. Cl. 426—330.3 12 Claims

1. A method of making a beverage drink which comprises the steps of:

pouring a flowable beverage concentrate which is at freezer temperatures into water wherein said beverage concentrate comprises a mixture of water, sugar and flavoring, said mixture having a water activity of about 0.80–0.90, up to about 0.93, and is substantially non-crystalline at freezer temperatures of about 10° F., and wherein said mixture comprises about 15–55% water, and sugar in a ratio to water of about 0.8–2:1, and said sugar component comprises at least about 50% fructose plus dextrose based on the total sugar content, and wherein the foregoing ingredients provide a microbiologically stable beverage concentrate which is flowable at freezer temperature of about 10° F.

4,332,825

CITRUS FOOD CONTAINING A CYCLODEXTRIN

Masaru Miyawaki, Tsunoekita, and Akira Konno, Osaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 23, 1980, Ser. No. 190,099

Claims priority, application Japan, Sep. 24, 1979, 54-122419

Int. Cl.³ A23B *7/44;* A23L *1/212, 2/16*

U.S. Cl. 426—330.5 16 Claims

1. A citrus food stabilized against clouding and possessing reduced bitterness, which consists essentially of a natural citrus material and 0.005 to 1.0 percent by weight of a cyclodextrin, based on the weight of the natural citrus material.

4,332,826

METHOD FOR CANNING FOOD PRODUCTS

Max P. Beauvais, 46 Southridge West, Tiburon, Calif. 94920, and Raymond E. Camezon, 623 Tunbridge Rd., Danville, Calif. 94526

Division of Ser. No. 107,425, Dec. 26, 1979, Pat. No. 4,294,167. This application May 18, 1981, Ser. No. 264,439

Int. Cl.³ A23L *3/00;* B65B *55/14*

U.S. Cl. 426—407 4 Claims

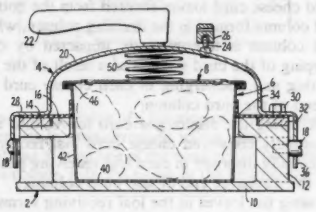
1. A method of sterilizing and canning food products without substantial cooking thereof and in a container having a lid covering the open end thereof, comprising the steps of

placing said food products into said container with a small quantity of liquid sufficient to cover the bottom of the interior of said container;

placing a lid having means capable of air-tight sealing over said container open end;

enclosing said lid and said container open upper end within a pressure-tight cover and resiliently urging said lid against said container open end while permitting steam generated within said container to escape past said lid into the volume enclosed by said cover, while maintaining the lower portions of said container exposed to ambient conditions;

applying dry heat to substantially only the lower portions of said container for a period sufficient to sterilize the contained food products by the generation of steam from the heating of said liquid; and



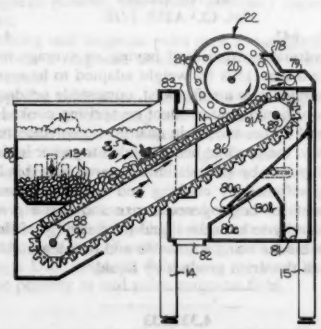
removing said heat and applying a cooling fluid to said exposed lower portions of said container while maintaining said cover in pressure-tight relation with said container upper end and urging said lid against said container open upper end, whereby the cooling of the container by the cooling fluid will condense any remaining steam within the container and create a pressure within the container which is lower than ambient to hold the lid onto the container in an air-tight seal.

4,332,827

METHOD OF CRACKING NUTS AT HIGH PRODUCTION RATES

James B. Quantz, Columbia, S.C., assignor to Machine Design Incorporated, Columbia, S.C.

Filed Oct. 23, 1980, Ser. No. 199,743
Int. Cl.³ A23N 5/02
U.S. Cl. 426—481 **9 Claims**



1. A method of cracking nuts at a high production rate and comprising the steps of

advancing a plurality of nuts in individual receptacles in succession along a first linear path of travel, with at least substantially all of the advancing nuts being disposed in a predetermined orientation,

removing the advancing nuts in succession from the first path of travel at the terminal end thereof and advancing the removed nuts in succession along a generally curvilinear second path of travel, with the second path of travel defining a circle which is substantially tangent to and disposed above the first path of travel, and such that the nuts continue to advance in the same general direction and are lifted as they move from the first path of travel into the second path of travel, and including clampingly engaging each nut during its removal from the first path of travel and advance along the second path of travel so as to preserve the predetermined orientation of each nut, and

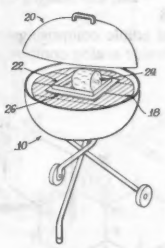
imparting a cracking force to each nut while being advanced along the second path of travel.

4,332,828

METHOD AND APPARATUS FOR COOKING FOOD IN AN ENCLOSED CHAMBER

Alfred H. Gallagher, 6 Keystone Ave., River Forest, Ill. 60305

Continuation of Ser. No. 2,193, Jan. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 823,952, Aug. 12, 1977, abandoned. This application Aug. 19, 1980, Ser. No. 179,541
Int. Cl.³ A23L 1/00
U.S. Cl. 426—523 **3 Claims**



1. A method of cooking food in an enclosed cooking chamber that includes means defining a heat source in the lower portion of the chamber and a horizontal grate located within the chamber above the heat source means, comprising the steps of:

placing food to be cooked in an open cooking vessel;

locating the cooking vessel with the food on the grate above the heat source means;

reflecting radiant heat and deflecting heated air currents away from direct application to the cooking vessel from the heat source means by locating a removable pad intermediate the grate and the cooking vessel, said pad comprising a relatively rigid and self-sustaining heat insulating core material and top and bottom layers of radiant heat reflective metallic foil, and said pad having horizontal dimensions providing an area at least as large but not materially larger than the exposed area of the cooking vessel and less than the horizontal dimensions of the grate, said metallic foil layers including a shiny reflective side and a less reflective side, the shiny reflective side of each foil layer being directed downwardly toward the heat source means;

providing space surrounding the cooking vessel within the cooking chamber; and

causing convected heat currents to flow vigorously through the cooking chamber to contact all exposed surfaces of the food being cooked in the vessel by closing the cooking chamber;

whereby heat concentration on the cooking vessel is eliminated and heat is distributed evenly over the food in the cooking vessel.

4,332,829
METHYLTHIOMETHYL ESTERS AS FLAVOR ADDITIVES

Steven van den Bosch, Woudenberg; Evert van't Land, Terschuur, and Jan Stoffelsma, Hoevelaken, all of Netherlands, assignors to Polak's Frutal Works, B.V., Amersfoort, Netherlands

Continuation-in-part of Ser. No. 52,154, Jun. 26, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 231,184

Claims priority, application United Kingdom, Jul. 18, 1978, 30161/78

Int. Cl.³ A23L *1/226, 1/235*

U.S. Cl. 426—535 **33 Claims**

17. A foodstuff to which has been added about 0.1 to 5 parts per million, based on the total weight of said foodstuff, of at least one methylthiomethyl ester having the structural formula $R—COOCH_2SCH_3$ wherein R is selected from the class consisting of hydrogen, alkyl radicals with 1 to 9 carbon atoms, alkenyl radicals with 2 to 9 carbon atoms and polyunsaturated alkyl radicals with 4 to 9 carbon atoms.

4,332,830
SWEETENING WITH STEVIOSIDE ANALOGS

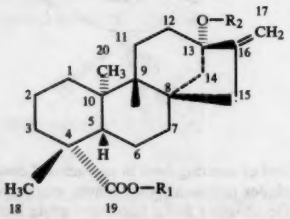
Grant E. DuBois, Palo Alto, Calif., assignor to Dynapol, Palo Alto, Calif.

Filed Sep. 22, 1980, Ser. No. 189,243

Int. Cl.³ A23L *1/236*

U.S. Cl. 426—548 **2 Claims**

1. A sweetened edible comprising an effective sweetening amount of a stevioside analog compound having the structure



wherein R_1 and R_2 are together selected from the following groups of substituents; R_1 is $—CH_2—_3SO_3^-M^+$ and R_2 is β-D-Sophorose; R_1 and R_2 are each $—CH_2—_3SO_3^-M^+$; and R_1 is hydrogen and R_2 is $—CH_2—_3SO_3^-M^+$, each case having M^+ being a physiologically acceptable alkali metal cation.

4,332,831
METHOD OF PREPARING SALTED CHEESE CURD LOAVES

Robert R. Rust, Cumberland, Wis., assignor to Universal Foods Corporation, Milwaukee, Wis.

Division of Ser. No. 879,965, Feb. 21, 1978, Pat. No. 4,244,286. This application Jul. 18, 1980, Ser. No. 170,004

Int. Cl.³ A23C *19/02;* **A01J** *25/11, 25/12*

U.S. Cl. 426—582 **5 Claims**

1. A method for preparing a salted cheese curd loaf, comprising:

(a) dewheying a mixture of cheese curd and whey to remove the preponderance of liquid whey therefrom;

(b) introducing the resulting curd into a blender having a valved discharge outlet for holding said curd and a small amount of residual whey and combining therewith a predetermined amount of salt which is essentially that amount desired in a final cured cheese to form a salted cheese curd;

(c) discharging the salted cheese curd to a cylindrical downwardly and outwardly tapered curd accumulation, draining and dewheying column having a perforated segment formed therein to permit whey to pass therethrough and out of the draining column while retaining the salted cheese curd in the draining column to form a downwardly and outwardly tapered curd column;

(d) maintaining a sufficient head of salted cheese curd in the draining column to form a column of curd and to dispel excess whey therefrom and thicken and compact the salted cheese curd to the desired loaf-forming consistency as it moves downward in the draining column;

(e) sequentially severing and discharging a predetermined amount of the compacted salted cheese curd from the discharge end of the curd column in a uniform series of salted cheese curd loaves severed from the bottom of the curd column formed in the draining column, whereby the curd column is intermittently impacted by downward dropping of the curd column as a result of the sequential severing and discharging of each cheese curd loaf from the end of the curd column;

(f) introducing the discharged curd loaves into a series of sequentially conveyed cheese curd loaf receiving forms sequentially disposed in curd loaf receiving position adjacent the discharge end of said curd column;

(g) pressing the loaves in the loaf receiving forms;

(h) removing pressed cheese curd loaves from the cheese curd loaf receiving forms;

(i) contacting the cheese curd loaf with a brine solution by immersion of the loaves for a time sufficient to form a rind on said loaf, but not sufficient to substantially alter or increase the salt content of the cheese curd loaf; and

(j) removing the rinded cheese loaf from the brine solution and curing the rinded cheese loaf for a defined period of time required by the standard of identity for the cheese being made.

4,332,832
ANIMAL FOOD AND METHOD

Keith Buckley, Melton Mowbray; Ian E. Burrows, Gaddesby, and Philip J. Lowe, Dunkirk, all of England, assignors to Mars Limited, London, England

Continuation of Ser. No. 969,234, Dec. 13, 1978, abandoned, which is a continuation of Ser. No. 826,655, Aug. 22, 1977, abandoned, which is a continuation of Ser. No. 698,738, Jun. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 457,484, Apr. 3, 1974, abandoned. This application Jan. 7, 1980, Ser. No. 110,245

Int. Cl.³ A23K *1/10*

U.S. Cl. 426—641 **4 Claims**

1. A rehydratable dried food having an average moisture content of less than 15% by weight adapted to be served for animal consumption as a soft, moist, comestible product upon the addition of liquid, said product comprising cooked bones, cooked animal tissue, and fat in quantity to enhance rehydration capability, the product being bonded together in the form of extruded pieces by pregelatinized starch as a binder, the bones being softened by cooking and coarsely ground into bone fragments of heterogeneous size and shape present in sufficient quantity to enhance liquid permeability of the dried product, the binder being softenable and disintegratable upon permeation of the dried product by liquid.

4,332,833
METHOD FOR OPTICAL MONITORING IN MATERIALS FABRICATION

David E. Aspnes, and Brian G. Bagley, both of Watchung, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

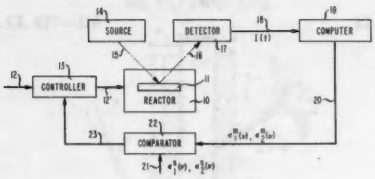
Filed Feb. 29, 1980, Ser. No. 126,217

Int. Cl.³ H01L *21/66*

U.S. Cl. 427—8 **20 Claims**

1. Method for fabricating an article by a sequence of fabrication steps, one of the steps comprising forming a polycrystalline or amorphous material, the method comprising

(a) determining a measured dielectric function $\epsilon^m(\nu)$ at a multiplicity of frequencies within a frequency range in which the dielectric function of the material $\epsilon(\nu)$ is substantially affected by interband or intraband transitions of electrons in the material,



(b) comparing the value of a function of $\epsilon^m(\nu)$ at one or more frequencies to predetermined values, and

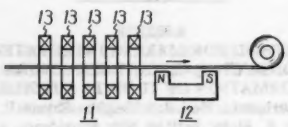
(c) modifying at least one of the sequence of fabrication steps in accordance with the result of the comparison.

4,332,834

METHOD OF MANUFACTURING A MAGNETIC RECORDING MEDIUM

Yutaka Takei, Sendai, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1981, Ser. No. 235,583
Claims priority, application Japan, Feb. 22, 1980, 55/21788
Int. Cl.³ B05D 3/14
U.S. Cl. 427—48 **9 Claims**



1. A method of manufacturing a magnetic recording medium comprising the steps of;

(a) preparing magnetic paint composed mainly of acicular magnetic powder, and binder uniformly dispersed in solvent,

(b) coating said magnetic paint on a non-magnetic substrate to form a magnetic coating layer on a surface of said substrate,

(c) applying orientation treatment to said magnetic coating layer to orient said magnetic powder along one direction, while said magnetic paint is still wet and said magnetic powder is movable in said magnetic paint,

(d) drying said magnetic coating layer until said magnetic powder is fixed,

wherein said orientation treatment being carried out by applying a pulse magnetic field along said one direction, being larger than coercive force of said magnetic powder, subsequently applying a D.C. magnetic field along the same direction and the same polarity as said pulse magnetic field.

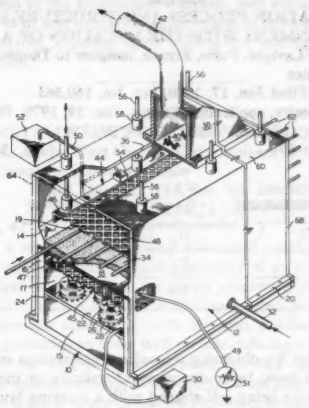
4,332,835

PLENUM MOUNTED GRID FOR ELECTROSTATIC FLUIDIZED BED

Walter G. Knudsen, Bethany, Conn., assignor to Electrostatic Equipment Corp., New Haven, Conn.

Filed Dec. 23, 1980, Ser. No. 218,522
Int. Cl.³ B05D 1/06
U.S. Cl. 427—32 **21 Claims**

1. Electrostatic fluidized bed coating apparatus comprising, in combination: a housing having a generally planar, substantially horizontal porous support member mounted therein to define within said housing a fluidization chamber thereabove and a plenum therebelow; means for introducing gas into said plenum for passage upwardly through said support member to effect fluidization of particulate coating material supplied to said chamber; means for ionizing gas passing from said plenum into said fluidization chamber, to effect electrostatic charging of such particulate material; and an electrically conductive, open structured control grid mounted within and substantially across said plenum effectively interposed between and spaced from said support member and said ionizing means, said grid being adapted for control of its electrical potential and for substantially unimpeded passage therethrough of the ionized gas, whereby the cooperative effects of fluidization and electrostatic charging may produce a cloud of electrostatically charged particulate material above said support member, and whereby said plenum grid may be used to affect the deposition of powder upon a workpiece exposed to such cloud.



11. In a method for depositing a particulate material upon a workpiece, wherein ionization of a gas is effected by exposing it to electrode means maintained at a high electrical potential, said ionized gas is passed through a substantially horizontal porous plate on which is supported a bed of particles to effect fluidization and electrostatic charging, so as to thereby produce a charged cloud thereof, and wherein the workpiece is maintained at a potential effectively opposite to that of said particles and is exposed thereto, the improvement comprising: passing, substantially without impediment, said ionized gas through an upwardly spaced electrically conductive control grid before passing it through said porous plate, with said grid maintained at an electrical potential substantially different from, and between the potentials of, said workpiece and the gas ionizing electrode means, whereby improved uniformity of deposit thickness, and/or higher powder deposition rates, may be achieved.

4,332,836

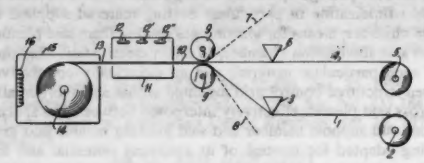
PROCESS FOR PRODUCING COMPOSITE INSULATING MATERIAL

Raymond C. Urban, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 10, 1980, Ser. No. 185,734
Int. Cl.³ B05D 3/06
U.S. Cl. 427—44 **10 Claims**

1. A process for the production of a composite insulating tape comprising moving a mica paper tape along its longitudinal axis toward coating and curing stations, coating one side of said mica paper tape with a curable admixture of resin material and cross-linking agent to form a composite insulating tape, and then exposing the composite insulating tape to radiant

energy to at least partially cure said admixture while simultaneously advancing said composite insulating tape around a



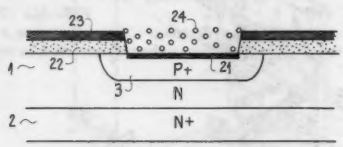
rotating cylindrical member, said rotating cylindrical member compressing said mica paper together with said curable admixture.

4,332,837

PASSIVATION PROCESS AND STRUCTURE FOR SELF-ALIGNMENT WITH THE LOCATION OF A MASK

Andre Peyre-Lavigne, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 17, 1980, Ser. No. 160,363
Claims priority, application France, Jun. 19, 1979, 79 15661
Int. Cl.³ H01L *21/24, 21/314*
U.S. Cl. 427—57 **9 Claims**



1. A process for obtaining a localized passivation structure comprising a basic layer deposited chemically in the vapor phase, this layer being self-aligned with a masking layer used during the process for manufacturing a silicon-based semiconductor component, said process comprising the following steps:

(a) cleaning the surface of the semiconductor in the openings of the mask;

(b) depositing a metal layer of a metal able to form with the silicon a silicide or a eutectic having a melting point at a temperature less than a predetermined temperature T;

(c) reheating so as to combine the metal layer and the visible surface of the semiconductor to form with the silicon a silicide or a eutectic have a melting point at a temperature less than a predetermined temperature;

(d) removing by selective etching the masking layer and the excess metal in the windows of the mask;

(e) depositing chemically in the vapor phase at least one layer of a passivation agent;

from which it results that, in the zones corresponding to the openings of the mask, the deposit of said passivation agent is powdery.

4,332,838

PARTICULATE THIN FILM FABRICATION PROCESS

James E. Wegrzyn, 173 Carlton Dr. East, Shirley, N.Y. 11967

Filed Sep. 24, 1980, Ser. No. 190,467
Int. Cl.³ B05D *5/12*; H01L *31/363, 21/363*
U.S. Cl. 427—74 **17 Claims**

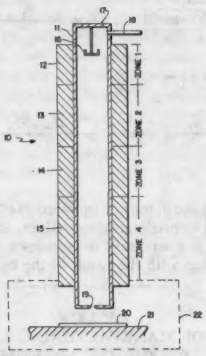
1. A process for depositing a particulate thin film of a vaporizable solid upon a substrate comprising:

vaporizing said solid in a first heating zone;

continuously conveying vapor from said first heating zone in a flowing carrier gas stream to a first condensation zone maintained at a temperature below that of said first heating zone to form an aerosol of disperse size particles;

passing said aerosol and said carrier gas through a second heating zone maintained at a temperature above said first condensation zone to vaporize a substantial portion, but not all, of said aerosol particles;

passing said carrier gas, now containing a depleted number of aerosol particles and vapor of said solid, from the second heating zone to a second condensation zone;



maintaining the temperature of said second condensation zone at a temperature below that of said second heating zone, said second condensation zone temperature being selected to cause growth of said aerosol particles by condensation of vapor thereon; and

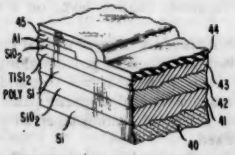
impacting said grown aerosol particles upon a substrate.

4,332,839

METHOD FOR MAKING INTEGRATED SEMICONDUCTOR CIRCUIT STRUCTURE WITH FORMATION OF TI OR TA SILICIDE

Hyman J. Levinstein, Berkeley Heights; Shyam P. Murarka, and Ashok K. Sinha, both of New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 974,378, Dec. 29, 1978, Pat. No. 4,276,557.
This application Jan. 22, 1981, Ser. No. 227,133
Int. Cl.³ H01L *21/283*
U.S. Cl. 427—85 **3 Claims**

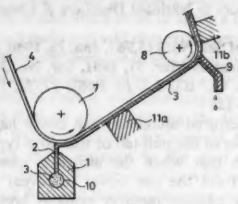


1. A method for making a semiconductor device from a wafer including a silicon epitaxial surface layer, said method comprising the steps of heating the wafer in an oxidizing atmosphere for a time and at a temperature for forming a first SiO_2 overlay, forming a first layer of doped polysilicon over said SiO_2 layer, depositing on said polysilicon layer a second layer of a material selected from the group consisting of Ti and Ta sintering the material of said second layer at a temperature and for a time to form a silicide $TiSi_2$ and $TaSi_2$ of the material, respectively, heating the wafer for a time and at a temperature to form a second SiO_2 overlay while leaving a layer of polysilicon in excess of 1000 Angstroms therebeneath, etching a pattern in said second SiO_2 overlay, depositing an electrically-conducting material over said second SiO_2 overlay, and etching a pattern in said electrically-conducting material.

4,332,840
COATING METHOD

Yasunori Tanaka; Shinji Noda, and Hiroshi Chikamasa, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 23, 1980, Ser. No. 171,509
Claims priority, application Japan, Jul. 23, 1979, 54-93545
Int. Cl.³ B05D 5/12
U.S. Cl. 427—130 12 Claims



1. A method for coating a web comprising the steps of: continuously transporting a web to be coated past a nozzle in an extrusion-type coating unit; and discharging a magnetic coating liquid through said nozzle onto said web, wherein:

(a) $V_0 > 0.3$ m/sec,

(b) 3 m/sec $> V_1 > 0.1$ m/sec,

(c) $3 > V_1/V_0$, and

(d) 15 cm $> d > 0.2$ cm

where V_0 is the coating liquid discharge speed at said nozzle of said extrusion-type coating unit, V_1 is the coating liquid striking speed at the surface of said web, and d is the distance between said nozzle and said surface of said web.

4,332,841
MOLD PREPARATION METHOD

Paul F. Price, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,219
Int. Cl.³ B44D 1/20
U.S. Cl. 427—135 12 Claims

1. A method for preparing a mold including an upper and lower mold member for use in a record molding apparatus for the molding of high density information discs from a plastic molding composition comprising the steps of:

treating the exposed surfaces of both the upper and lower mold members with a solvent to remove any grit, dirt, debris, dust, lint, fingerprints, or any other foreign matter therefrom,

treating the exposed surfaces of both the upper and lower mold members with a cleaning and drying agent to remove any solvent remaining thereon and to completely dry the exposed surfaces,

applying a coating of an antistatic agent to the surface and other exposed areas of both the upper and lower mold members, and

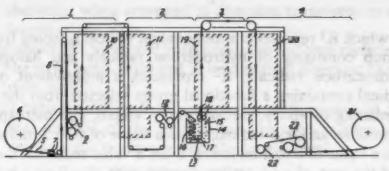
applying a coating of a mold lubricant to the surface of both the upper and lower mold members.

4,332,842
PRODUCTION OF BELTING

Peter J. Litchield, Leyland, and John K. Taylor, Chorley, both of England, assignors to TBA Industrial Products Limited, England

Filed Nov. 20, 1979, Ser. No. 96,123
Claims priority, application United Kingdom, Nov. 22, 1978, 45621/78
Int. Cl.³ B05D 1/18, 3/02, 3/12
U.S. Cl. 427—176 9 Claims

1. In the production of solid woven conveyor belting by a process which includes the steps of treating a solid woven belting fabric carcass containing both natural fibers and heat shrinkable synthetic fibers with an impregnant material by subjecting said carcass to a plurality of alternating changes in direction whilst immersed in said material, and then heating the treated carcass to gel the impregnant, the improvement which comprises subjecting said carcass to a preliminary heat treat-



ment immediately prior to immersing said carcass in said material, whereby said synthetic fibers undergo shrinkage prior to immersion in the impregnant material, said shrinkage closing interstices of said carcass to some extent to reduce the impregnant material expelled upon subsequent heating to gel the impregnant.

4,332,843
METALLIC INTERNAL COATING METHOD

Pritam L. Ahuja, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Mar. 23, 1981, Ser. No. 246,345
Int. Cl.³ C23C 13/02
U.S. Cl. 427—237 7 Claims

1. In a method for applying a metallic coating to a fluid-cooled turbomachinery blading member of an alloy based on an element selected from the group consisting of Co, Ni and their mixtures, the member including an end portion and an airfoil portion connected with the end portion, the airfoil portion including an inner wall surface defining a fluid-cooling passage, the end portion including an end channel therethrough communicating with the fluid-cooling passage, the metallic coating being deposited from a coating powder mixture comprising a coating source powder, a halide activator and an inert filler powder wherein:

a substantially dry coating powder mixture is provided with an inert filler powder having a nonuniform powder size blend which varies predominantly within the range of +325 mesh to −140 mesh;

disposing the coating powder mixture in the end channel, adjacent the fluid-cooling passage;

mechanically retaining the powder mixture in the end channel; and then,

heating the article and mixture in a nonoxidizing atmosphere at a temperature and for a time sufficient to react the coating source powder and the activator to generate from the coating source powder a coating vapor within the end channel and within the adjacent fluid-cooling passage, the coating vapor within the fluid-cooling passage contacting the passage inner wall surface to deposit thereon the metallic coating.

4,332,844
SILICONE COMPOSITIONS FOR ADHESION AND METHOD FOR ADHERING SILICONE RUBBER TO A SUBSTRATE

Mitsuo Hamada, Kisarazu; Sadami Yasuda, and Chiichiro Hasegawa, both of Ichihara, all of Japan, assignors to Toray Silicone Limited, Tokyo, Japan

Filed Jan. 2, 1981, Ser. No. 222,214
Claims priority, application Japan, Jan. 21, 1980, 55/5512
Int. Cl.³ B05D 3/02
U.S. Cl. 427—387 22 Claims

9. A method for adhering silicone rubber to a substrate comprising

applying a coating of a silicone composition to a substrate

surface, said silicone composition consisting of (A) 100 parts by weight of an organosilicon compound having an average unit formula

$$R^1_aR^2_b(OR^3)_cSiO_{\frac{4-a-b-c}{2}}$$

in which R^1 represents a monovalent radical selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals; R^2 represents a monovalent organic radical containing a functional group selected from the group consisting of epoxy, methacryloxy, amino, and mercapto; R^3 represents an alkyl radical; a has a value of 0 to 3 inclusive; b has a value of 0 to 3 inclusive; c has a value such that $0<c\leqq4$; and the sum of $a+b+c$ has a value such that $0<a+b+c\leqq4$; and said organosilicon compound containing at least one silicon-bonded alkoxy radical per molecule, (B) 5 to 500 parts by weight of an organotitanate, and (C) 5 to 1000 parts by weight of an organohydrogensilicon compound having an average unit formula

$$R^4_xH_ySiO_{\frac{4-x-y}{2}}$$

in which R^4 represents a monovalent radical selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals; x has a value such that $0<x\leqq3$; y has a value such that $0<y\leqq2$; and the sum of $x+y$ has a value such that $0<x+y\leqq4$; and said organohydrogensilicon compound contains at least one SiH per molecule,

drying the coating,

applying an unvulcanized silicone rubber containing a curing catalyst over the dried coating, and thereafter

curing the silicone rubber.

4,332,845

OXYGEN ABSORBENT-CONTAINING BAG

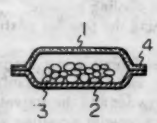
Takanari Nawata; Toshio Komatsu, both of Tokyo, and Yukio Kondoh, Yono, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 11, 1980, Ser. No. 217,413

Claims priority, application Japan, Dec. 21, 1979, 54-177432; Jun. 26, 1980, 55-89576

Int. Cl.³ B32B *3/10*

U.S. Cl. 428—35 **5 Claims**



1. A bag in which an oxygen absorbent is sealed, wherein at least part of the material constituting the bag is composed of a laminated sheet comprising a microporous film having a gas permeable sheet laminated to one or both sides thereof;

wherein said gas permeable sheet is selected from the group consisting of

(a) paper, cloth, non-woven fabric, or a lamination of two or more of said paper, cloth and non-woven fabric,

(b) a plastic film with through holes of 100–3,000μ, or a lamination of two or more plastic films with through holes of 100–3,000μ, and

(c) a composite sheet composed of a member of group (a) and a member of group (b) as defined above;

wherein the microporous film is a mono-layer film having a plurality of fine openings and being gas-permeable, but water-impermeable when there is no difference between pressure outside the bag and pressure in the bag, in which the size of the openings are in the range of 0.01–50 microns, with the distance across the short axis thereof being less than 2 microns; and

wherein the layer of said laminated sheet which has the lowest softening point constitutes the inner surface of the bag.

4,332,846

CAN COVER

Joseph Fischer, Cincinnati, Ohio, and Gerald M. Platz, Conroe, Tex., assignors to National Distillers & Chemical Corp., New York, N.Y.

Continuation of Ser. No. 115,962, Jan. 28, 1980, abandoned. This application Mar. 31, 1981, Ser. No. 249,521

Int. Cl.³ B32B *3/10*; B65D *17/32, 17/34*

U.S. Cl. 428—131 **5 Claims**

1. In an apertured aluminum can cover having a peelable closure member of the pull tab or tear strip type covering said aperture, such that when the aforesaid closure member is peeled away from the can cover to reveal the aperture, a portion of the closure member remains bonded to the can cover, the improvement which comprises a closure member directly adhered to the can cover, said closure member fabricated from a partially hydrolyzed ethylene-vinyl acetate copolymer obtained from the hydrolysis of from about 50 percent to about 80 percent of the vinyl acetate groups of an ethylene-vinyl acetate copolymer containing from about 40 percent to about 80 percent by weight of interpolymerized vinyl acetate.

4,332,847

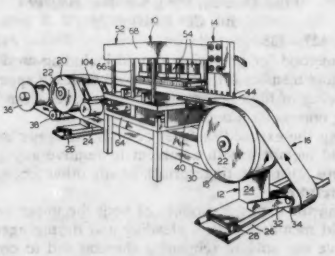
METHOD FOR COMPRESSION MOLDING OF RETROREFLECTIVE SHEETING AND SHEETING PRODUCED THEREBY

William P. Rowland, Southington, Conn., assignor to Relfexite Corporation, New Britain, Conn.

Division of Ser. No. 77,488, Sep. 20, 1979, Pat. No. 4,244,683. This application Aug. 18, 1980, Ser. No. 178,842

Int. Cl.³ B29C *17/00*; B29D *11/00*; G02B *5/12*

U.S. Cl. 428—156 **8 Claims**



1. In a method for embossing synthetic plastic sheet material to generate precisely formed embossments on one surface thereof, the steps comprising:

A. disposing one surface of an elongated strip of synthetic thermoplastic sheet material on an elongated member movable in a path providing a series of stations therealong;

B. placing on the other surface of said synthetic plastic sheet material a series of embossing molds having the desired embossing pattern in their adjacent surfaces, said molds being closely spaced along the length of said sheet material;

C. moving a clamping member against the first of said series of molds to apply clamping force to said first of said series of molds and said elongated member at the first of said series of stations to deform said sheet material therebetween and cause said synthetic plastic thereof to flow into said embossing pattern of said mold to effect embossment thereof;

D. moving said clamping member away from said first of

said series of molds to release said clamping force on said first of said series of molds and elongated member;

E. advancing said first mold and the cooperating portions of said elongated member and sheet material to a second station and a second mold and cooperating portions of said elongated member and sheet material to said first station;

F. moving a second clamping member against said first mold to apply a clamping force to said first mold and elongated member at said second station while simultaneously moving said first mentioned clamping member against said second mold at said first station to apply a clamping force to said second mold and said elongated member at the first station to effect embossment of said sheet material thereat;

G. moving said clamping members away from said first and second molds to release said clamping force at said first and second stations and advancing the first and second molds and the cooperating portions of said elongated member and sheet material to the next stations while advancing a third mold into registry with said first station;

H. moving said first and second clamping members against said molds registering therewith to apply a clamping force to said molds and elongated member at each of said stations;

I. repeating the foregoing series of steps to advance said molds, elongated member and sheet material through said series of stations;

J. controlling the temperature of said molds at at least some of said stations so that said synthetic resin of said sheet material is readily deformed into the embossing pattern of the mold at said first station and is cooled in its mold in subsequent stations; and

K. stripping said embossed sheet material from said molds and elongated member after it has advanced through said series of stations.

7. An elongated strip of embossed synthetic thermoplastic resin sheet material having a series of closely spaced repeating patterns of precisely formed embossments on one surface along substantially the entire length thereof, said embossments being microprisms having a vertical height of not more than 0.008 inch, the deviation in the embossments for the first pattern in the series on said strip from that of the last pattern in the series being less than one percent, said strip being produced in accordance with the method of claim 1.

4,332,848

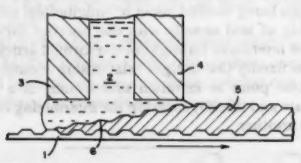
STRUCTURALLY DEFINED GLASSY METAL STRIPS

Mandayam C. Narasimhan, Seekonk, Mass., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 20,907, Mar. 16, 1979, Pat. No. 4,212,343. This application Mar. 3, 1980, Ser. No. 126,249

Int. Cl.³ B32B *3/28, 3/30*

U.S. Cl. 428—174 **5 Claims**



1. A strip of glassy metal having a thickness of from about 0.02 to about 0.14 mm, and being structurally defined in having substantially corresponding protrusions and indentations on opposite surfaces, said protrusions and indentations being defined by walls having a height and depth of from about 0.1 to about 20 times the thickness of the strip, with the provisos that

(a) walls defining protrusions and indentations of height and depth respectively of less than the thickness of the strip are not steeper than about 88°, measured with respect to the base surface of the strip; and

(b) walls defining protrusions and indentations of height and depth greater than the thickness of the strip are not steeper than

(i) about 65°, measured with respect to the base surface of the strip, when arranged in direction transverse to the length of the strip,

(ii) about 85°, measured with respect to the base surface of the strip, when arranged in longitudinal direction of the strip, and

(iii) between 65° and 85°, measured with respect to the base surface of the strip, when arranged in direction between the transverse and the longitudinal.

4,332,849

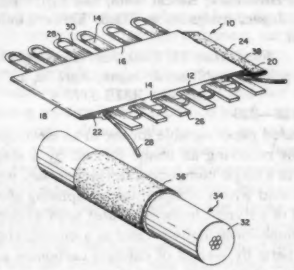
COLD SHRINK CABLE REPAIR DEVICE

Lee A. Barkus, Millersburg, and Craig W. Simons, New Cumberland, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 28, 1980, Ser. No. 211,018

Int. Cl.³ B32B *1/08, 3/02*

U.S. Cl. 428—188 **5 Claims**



1. A device which comprises:

a. a sheet of material resiliently elongated in one direction and having a plurality of spaced-apart holes extending therethrough in a direction normal to the elongation;

b. a plurality of removable support means positioned in the holes to hold said sheet in the elongated state; and

c. anti-friction means for facilitating the withdrawal of the support means whereupon said sheet returns to its pre-elongated dimensions.

4,332,850

VINYL ACETATE-ETHYLENE EMULSIONS FOR NONWOVEN GOODS

John G. Iacoviello, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 26, 1981, Ser. No. 267,271

Int. Cl.³ D04H *1/58*

U.S. Cl. 428—288 **12 Claims**

1. In a process for producing an aqueous emulsion suitably adapted for producing non-woven goods said emulsion containing a vinyl acetate-ethylene copolymer wherein said copolymer contains from about 60–96% by weight of vinyl acetete and is produced by (a) forming an aqueous suspension of vinyl acetate, ethylene, and stabilizer, (b) pressurizing the reactor with ethylene to form a vinyl acetate-ethylene raction mixture, (c) initiating the polymerizaton of the reaction mixture by the addition of catalyst, incrementally adding a crosslinkable monomer in a proportion of the 0.5–10% by weight of the copolymer, and (d) carrying out said polymerization at a temperature from 45°–85° C. of 10–100 atmospheres, the improvement for enhancing the absorptive properties of said copolymer which comprises:

pressurizing the reactor with ethylene to an initial ethylene equilibrium pressure of from about 100 to 1,000 psig;

initiating the reaction mixture by the addition of catalyst at a temperature from about 10°–35° C. and bringing the reaction mixture to a reaction temperature of from 45°–85° C. and operating pressure within a period of not more than 2 hours and the reaction temperature exceeds the initiation temperature by at least 20° C.;

adding the crosslinkable monomer at a substantially uniform rate such that the major portion of monomer has been added by the time the vinyl acetate content in the emulsion has been reduced to a level of from 3–25% by weight of the emulsion;

and

continuing polymerization of the reaction mixture until the vinyl acetate content in said emulsion is reduced below about 1% by weight.

4,332,851

RECEPTOR SHEET FOR ELECTROPHOTOGRAPHY

Hiroyoshi Hosomura; Koichi Aota, and Eiji Yoshimura, all of Tokyo, Japan, assignors to Rank Xerox Limited, London, England

Filed Mar. 11, 1980, Ser. No. 129,494
Claims priority, application Japan, Apr. 10, 1979, 54-42603
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—325 7 Claims

1. A coated paper suitable for use in an electrophotographic process for receiving an image formed by a magnetic brush device with a single component developer, said paper having a surface coated with a composition comprising about 100 parts by weight of a styrene/butadiene latex with 40 parts by weight of a melamine-formaldehyde resin as a crosslinking agent, and about 50 parts by weight of calcium carbonate as a pigment, said coating composition being coated on paper at an amount of about 3 grams/square meter.

4,332,852

CONDITIONED COLLOIDAL SILICA POST IMPREGNANT TO PREVENT BINDER MIGRATION IN THE PRODUCTION OF INSULATION ARTICLES COMPRISING RANDOMLY ORIENTED REFRACTORY FIBERS

Harris J. Korklan, Granger, and John K. Greany, S. Bend, both of Ind., assignors to Kennecott Corporation, Stamford, Conn.

Division of Ser. No. 891,368, Mar. 29, 1978, Pat. No. 4,204,907.
This application Dec. 3, 1979, Ser. No. 99,374
Int. Cl.³ D21F *13/00*
U.S. Cl. 428—331 2 Claims

1. An inorganic refractory insulation article comprising randomly oriented refractory fibers retained by dried colloidal silica uniformly distributed throughout the article and from about 0.001 to about 1.5 weight percent of aluminum chlorhydrate.

2. The article of claim 1 wherein said article is a board and wherein said board has a density of from about 0.4 to about 0.6 gms/cc, contains from about 30 to about 50 weight percent fiber, from about 10 to about 45 weight percent dried colloidal silica, from about 0.001 to about 1.5 weight aluminum chlorhydrate and the balance being a filler selected from the group consisting of colloidal clay, ground silica having an average particle size of smaller than about 200 mesh, and mixtures thereof.

4,332,853

CONDUCTIVE PLASTIC WITH METALIZED GLASS FIBERS RETAINED IN PARTIAL CLUMPS

Frederick C. Hornbeck, Sunnyvale, Calif., and James E. Henning, Deerfield Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y. and Lundy Electronics & Systems, Inc., Pompano Beach, Fla.

Division of Ser. No. 931,064, Aug. 4, 1978, Pat. No. 4,258,101, which is a continuation of Ser. No. 795,351, May 9, 1977, abandoned. This application Sep. 26, 1980, Ser. No. 191,456
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—371 4 Claims

1. A thermo plastic molding pellet for molding articles of plastic and metalized glass fibers by a process in which the fibers disperse through a molded article but tend to become aligned in the general direction of the flow of plastic into a mold and contact between adjacent fibers for electrical conductivity is thereby reduced, comprising,

a core of metalized glass fibers and an outer body of a thermoplastic,

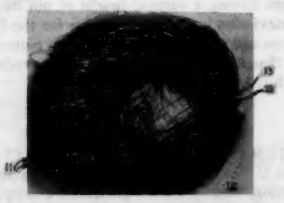
wherein the metalized glass fibers in the core of a pellet are arranged with an inner sub-bundle of fibers and an outer grouping of sub-bundles formed about said inner sub-bundle to partially disperse in the molded article as individual fibers and partially to remain as clumps having a thickness that is appreciably greater than the thickness of an individual fiber for improving the fiber to fiber contact in the direction orthogonal to the general direction of plastic flow in a subsequently molded plastic article.

4,332,854

POLYPROPYLENE OIL REMOVAL STRUCTURE

James H. Parker, P.O. Box 1652, Norfolk, Va. 23501

Continuation of Ser. No. 579,907, May 22, 1975, abandoned. This application Aug. 4, 1980, Ser. No. 174,744
Int. Cl.³ E02B *15/04*
U.S. Cl. 428—377 5 Claims



1. A loose, fluffy polyolefin article for manual use in the pick-up of viscous oil comprising a plurality of intermixed strands of polyolefin in encircling, closed relationship, each of said strands being twisted about its longitudinal axis causing an intermixing of said strands with one another forming a large number of interstices throughout the formed article and securing means fixedly tied in tight relationship around said strands at only one point to maintain said strands in a twisted and closed state and thereby insuring the intermixing of the strands with one another.

4,332,855

POLYMERIC COMPOSITIONS

Steven C. Zingheim, Mt. View, and Hans E. Lunk, Menlo Park, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 14, 1978, Ser. No. 896,244
Int. Cl.³ B32B *15/00, 15/08*
U.S. Cl. 428—379 11 Claims

1. A wire having a melt-extruded insulating coating thereon of a composition which comprises an intimate mixture of

(1) a polyester in which at least 90 mole % of the repeating units are tetramethylene terephthalate units and which has a solubility parameter S;

(2) 10 to 40% by weight, based on the weight of the polyester, of a second polymer which

(a) has a flex modulus of 500 to 40,000 psi, and

(b) has solubility parameter of (S+1.5) to (S−1.5); and

(3) flame retardant in an amount such that the ratio by weight of the second polymer to the flame retardant is at least 0.5:1, the flame retardant comprising bromine-containing organic flame retardant in an amount such that the composition contains 5 to 30% by weight, based on the weight of the composition, of bromine-containing organic flame retardant.

9. A composition according to claim 1 wherein the brominated organic flame retardant is decabromo-diphenyl ether.

4,332,856

CARBON OR GRAPHITE ARTICLE AND METHOD OF MAKING BY IMPREGNATING WITH A LIGNIN SULFONATE COMPLEX

Harry L. Hsu, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 192,069

Int. Cl.[3] B32B *9/00*

U.S. Cl. 428—408 12 Claims

1. In a process for producing a carbon or graphite article by forming a mixture of carbon filler and carbonaceous binder, baking the formed mixture to produce a carbon body, impregnating the carbon body with an impregnation agent, and carbonizing or graphitizing the impregnated carbon body, the improvement wherein said impregnation agent consists essentially of an aqueous solution of a lignin sulfonate complex.

11. A carbon or graphite article prepared by forming a mixture of carbon filler and carbonaceous binder, baking the formed mixture to produce a carbon body, impregnating the carbon body with an impregnation agent, and carbonizing or graphitizing the impregnated carbon body, the improvement wherein said impregnation agent consists essentially of an aqueous solution of a lignin sulfonate complex.

4,332,857

PRIMER COMPOSITION AND A METHOD FOR TREATING A PLASTICS SUBSTRATE USING THE SAME

Susumu Taniyama, Toyonaka, and Goro Shimaoka, Sakai, both of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

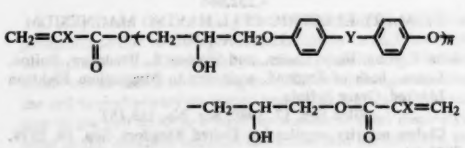
Filed Feb. 4, 1980, Ser. No. 118,107

Claims priority, application Japan, Feb. 5, 1979, 54-12018

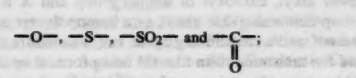
Int. Cl.[3] C12C *3/04;* C08F *220/20;* B32B *27/30*

U.S. Cl. 428—412 11 Claims

1. A method for treating a plastic substrate which comprises coating a plastic substrate with the primer composition prepared by dissolving in an organic solvent one or more diacryloyloxy compounds of the formula:



(wherein X is a hydrogen or methyl group; Y is a linear or branched-alkylene group having less than 8 carbon atoms or a binding group selected from the group consisting of



n is an integer of from 1 to less than 10),

drying the primer-coated plastic substrate to provide a dry primer coating consisting essentially of said one or more diacryloyloxy compounds,

coating the dry primer-coated substrate with a curable resin-containing top-coating finish and

curing the finish.

4,332,858

MULTI-LAYER LAMINATE COMPRISING A MODIFIED STYRENE-BUTADIENE BLOCK COPOLYMER

Akira Saitoh, Fujisawa; Akio Yamori, and Toshio Ibaragi, both of Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 26, 1979, Ser. No. 106,943

Claims priority, application Japan, Dec. 27, 1978, 53-160021

Int. Cl.[3] B32B *9/04, 27/10*

U.S. Cl. 428—412 1 Claim

1. A multi-layer laminate comprising at least one A–B double layer structure, characterized in that said layer A is a layer comprising at least one material selected from the group consisting of olefin polymers, polyamide polymers, acrylate polymers, polyether polymers, polycarbonate polymers, polyurethane polymers, vinylidene chloride polymers, thermosetting resins, vulcanized rubbers, glass and papers and said layer B is a layer consisting essentially of a modified block copolymer in which an unsaturated dicarboxylic acid or its anhydride selected from the group consisting of maleic acid, fumaric acid and maleic anhydride is grafted on a styrene-butadiene block copolymer containing two or more polymer blocks composed mainly of styrene and one or more polymer blocks composed mainly of butadiene, the weight ratio of styrene to butadiene in said styrene-butadiene block copolymer being in the range of 20/80–85/15 and the content of said unsaturated dicarboxylic acid or its anhydride in the modified block copolymer being 0.05%–1% by weight.

4,332,859

COATED MATERIALS AND PRODUCTION THEREOF

Masaaki Funaki, Toyonaka; Motoaki Yoshida, Kawanishi; Yoshinori Shimauchi; Akira Fujioka, both of Osaka, and Kazuo Sakiyama, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 943,813, Sep. 18, 1978, Pat. No. 4,242,412. This application Feb. 8, 1980, Ser. No. 119,773

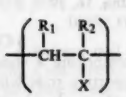
Claims priority, application Japan, Sep. 27, 1977, 52-116536

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.[3] B32B *27/36, 17/10, 27/42;* B05D *3/02*

U.S. Cl. 428—412 14 Claims

1. A formed material of plastics of glass coated with a resin film (1) and a melamine resin film (2), the resin film (1) being formed on the surface of the formed material by using (a) a mixture of methylolmelamine in which all or a part of the methylol groups are alkyletherified, and a polyhydric alcohol having a molecular weight of 1,500 or less which may contain an ethylene oxide or propylene oxide chain, or a pre-condensate thereof, (b) a mixture of a monomer having a unit of the formula (1).



(I)

wherein R_1 and R_2 are independently a hydrogen atom or a

lower alkyl, carboxyl or amino group and X is a hydroxyl group-containing side chain, or a homopolymer or copolymer thereof, and a crosslinking agent, or (c) a mixture of (a) and (b), and the melamine resin film (2) being formed on the resin film (1) by using (d) a mixture of methylolmelamine in which all or a part of the methylol groups are alkyletherified, and a polyhydric alcohol having a molecular weight of 100 to 2,000 and an ethylene oxide chain, or a pre-condensate thereof, and (e) a surface active agent.

4,332,860

AQUEOUS POLYMER DISPERSIONS FOR THE TREATMENT OF LEATHER

Ferdinand Heins, Erkrath, and Wolfgang Speicher, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 081,101, Oct. 2, 1979, abandoned. This application Apr. 3, 1981, Ser. No. 256,844

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843780

Int. Cl.³ B32B *9/04*; C08L *33/14*

U.S. Cl. 428—473 **1 Claim**

1. A method of treating leather comprising applying to said leather an aqueous dispersion having a pH of from 2 to 7 and particle diameters of from 20 to 150 nm of polymers having a $T\lambda_{max}$ value below 20° C. of:

(A) from 20 to 70 parts, by weight, of one or more acyclic conjugated dienes having from 4 to 9 carbon atoms;

(B) from 10 to 40 parts, by weight of acrylonitrile and/or methacrylonitrile;

(C) from 1 to 5 parts, by weight of allylsulphonic acid and/or methallyl sulphonic acid or water-soluble salts thereof;

(D) from 5 to 15 parts, by weight of acrylic and/or methacrylic acid hydroxyalkylesters having from 2 to 4 carbon atoms in the hydroxyalkyl group; and

(E) 0 to 40 parts, by weight, of acrylic acid and/or methacrylic acid alkyl esters having up to 8 carbon atoms in the alkyl group.

4,332,861

PLASTIC SURFACE TREATMENT

Helmut Franz; James H. Hanlon, both of Pittsburgh, and Lloyd G. Shick, Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1980, Ser. No. 209,637

Int. Cl.³ B05D *3/12*; B32B *27/30*; C08J *7/04*

U.S. Cl. 428—520 **10 Claims**

1. A method for treating plastic articles comprising the steps of:

a. processing a plastic article whereby a rough surface is produced; and

b. coating the rough surface with a clear polymer selected from the group consisting of acrylics, polyurethanes and epoxy resins to provide a smooth, durable transparent finish.

4,332,862

WELDED FLEXIBLE SCREEN DECK

John Desmet, Deerlijk, Belgium, assignor to N. V. Bekaert S. A., Zwevegem, Belgium

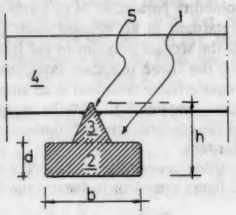
Filed Jan. 7, 1980, Ser. No. 109,880

Claims priority, application Belgium, Jan. 16, 1979, 873488

Int. Cl.³ B32B *3/30*; B01D *39/10*

U.S. Cl. 428—593 **3 Claims**

1. A welded flexible screen deck comprising a series of parallel screen rods and transverse supporting rods wherein the supporting rods (1) are secured at the back side of the screen and have a cross-sectional profile with a substantially rectangular body portion (2) and a rib portion (3) resting against the screen rods such that the height h of the cross-section does not exceed the width b and wherein the thickness d of the body portion is $\leqq h/2$.



4,332,863

MAGNETIC RECORDING MEDIUM

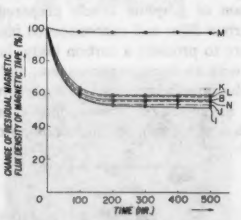
Akihiko Hosaka, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,530

Claims priority, application Japan, Aug. 12, 1979, 54-0102667

Int. Cl.³ H01F *10/10*

U.S. Cl. 428—695 **2 Claims**



1. A magnetic recording medium comprising a substrate coated with a magnetic composition, said composition having been obtained by (1) dry reducing a metal oxide powder in a hydrogen atmosphere, (2) maintaining the resulting magnetic powder in an inert medium to prevent contact with an oxidizing atmosphere, (3) dispersing the magnetic powder in an inert medium solution of oleic acid to form an oleic acid layer on the surface of the powder, (4) drying the coated magnetic powder, and (5) incorporating the dried, coated magnetic powder into the magnetic composition.

4,332,864

PRIMARY ELECTRIC CELL HAVING MAGNESIUM ALLOY ANODE

John F. King, Bury, Lancs., and Stephen L. Bradshaw, Bolton, Lancs., both of England, assignors to Magnesium Elektron Limited, Great Britain

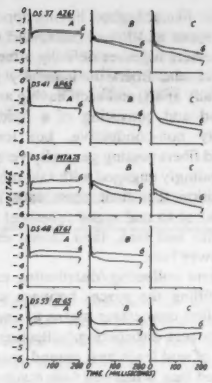
Filed Sep. 17, 1980, Ser. No. 188,152

Claims priority, application United Kingdom, Sep. 19, 1979, 7932401

Int. Cl.³ H01M *6/34, 4/38*

U.S. Cl. 429—3 **7 Claims**

1. An electric primary cell having an anode made of a mag-



nesium alloy containing the following constituents by weight, apart from normal impurities:

Al	1–9%
Zn	0–4%
Sn	0.1–5%
Mn	0–1%
Mg	Remainder.

4,332,865

PROCESS FOR PRODUCING SOLID ELECTROLYTE PRIMARY CELL

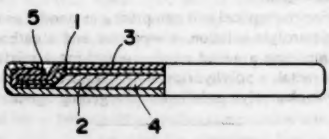
Tadashi Sotomura, Kashiwara; Satoshi Sekido, Yawata; Ken'Ichi Morigaki, Kobe; Ryoji Okazaki, Katano, and Muneaki Nakai, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 2, 1980, Ser. No. 193,156

Claims priority, application Japan, Oct. 8, 1979, 54-134951; Oct. 8, 1979, 54-134952

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—48 2 Claims



1. A process for reducing deterioration in the discharge performance due to storage and particularly to high temperature storage of a solid electrolyte primary cell having a lithium anode and an iodine containing cathode, comprising subjecting the cell to preliminary discharge immediately after the fabrication of the cell to form a uniform and dense solid electrolyte layer at the interface between the anode and the cathode, the step of subjecting the cell to preliminary discharge being carried out by subjecting the cell to cell discharge until the amount of such discharge reaches at least 2 mAh per cm^2 of the lithium anode surface.

4,332,866

METHOD OF TEMPERATURE REGULATION

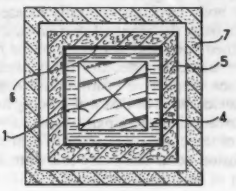
Jean Jacquelin, Malassis, and Jean-Paul Pompon, Vitry, both of France, assignors to Societe Anonyme dite: Compagnie Generale D'Electricite, Paris, France

Filed Jan. 21, 1981, Ser. No. 226,546

Claims priority, application France, Jan. 22, 1980, 80 01290

Int. Cl.³ H01M *6/18, 10/50*

U.S. Cl. 429—50 6 Claims



1. A method of regulating the temperature of a system in which an exothermic reaction takes place intermittently at a temperature of at least one hundred degrees centigrade, said reaction taking place in a reactor and during reaction periods which are interspersed with periods of stoppage; the method comprising:

keeping said system in thermal contact with a mass of a first substance chosen to have a boiling point close to the required temperature of the system; whereby heat resulting from said exothermic reaction causes said first substance to boil;

keeping said first substance in thermal contact with a mass of a second substance chosen to have a melting point close to but less than the boiling point of the first substance, whereby heat derived from condensation of the vapour of the first substance causes said second substance to melt; and regulating the temperature of the second substance by adding heat thereto or removing heat therefrom as required to ensure that once all the second substance has melted during a period of exothermic reaction its temperature does not rise more than a few degrees above its melting point, and that once all the second substance has solidified during a stoppage period its temperature does not fall more than a few degrees below its melting point.

4,332,867

BATTERY COIL CONSTRUCTION

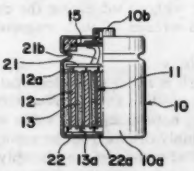
Singo Tsuda, Kadoma; Minoru Yamaga, Hirakata, and Yuzuru Kawai, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 7, 1980, Ser. No. 204,790

Claims priority, application Japan, Nov. 7, 1979, 54-144596

Int. Cl.³ H01M *4/00*

U.S. Cl. 429—94 3 Claims



1. A battery coil construction comprising a positive plate having a main portion containing active material and an edge portion free of said active material, a negative plate having a main portion containing active material and an edge portion free of said active material, at least one separator, said positive

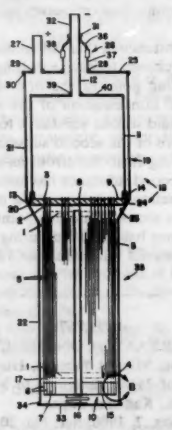
and negative plates being wound together to form a coil assembly with said separator positioned between the positive and negative plates, said positive and negative plates being longitudinally offset from each other so that said edge portion of one plate extends outwardly from the other edge portion of the other plate and also the separator while said edge portion of the other plate extends outwardly from the other edge portion of said one plate, a positive current collector constituted by a generally ring-shaped holeless body and an elongated tab extending outwardly from the outer periphery of said ring-shaped body, and a negative current collector constituted by a holeless disc body having a centrally located tongue protruding outwards from the plane of one surface of said disc body, said ring-shaped body and disc body of the respective positive and negative current collectors being welded to the edges portions of the respective positive and negative plates by a plurality of welds, each of said welds being formed by applying a welding current through a pair of spaced welding electrodes to a portion of the current collector to heat it to a red-hot state thereby to fusion-bond said body to a plurality of turns of the edge portion of the respective plate.

4,332,868

HIGH TEMPERATURE BATTERY CELL COMPRISING STRESS-FREE HOLLOW FIBER BUNDLE

Joginder N. Anand, Clayton; Timothy T. Revak, and Frank J. Rossini, both of Concord, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 1, 1978, Ser. No. 939,156
Int. Cl.³ H01M *2/02*
U.S. Cl. 429—178 **15 Claims**



1. A battery cell in which the electrolyte/separator is in the form of a plurality of hollow fiber lengths and the cell is so constructed that high temperatures may be employed in its fabrication or use without subjecting the cell components to thermally induced stresses of such magnitude as to damage them,

said cell comprising:

a casing which is fitted with electrical leads adapted to function as positive and negative terminals of the cell and has top, bottom and side walls; and

an inner assembly disposed in the casing and so engaged therewith that motion of the assembly therein is limited but motion of the assembly components as a result of thermally induced dimensional changes is not hampered,

said assembly comprising

(a) an upper member having the general shape of a bell or an inverted cup, the bottom edge of which is sealingly engaged with a fluid-impervious, electrically inert, generally disc-like, tubesheet having opposed, generally horizontal, upper and lower faces, said upper member and the tubesheet together defining a tank,

(b) a bundle of said fibers, in generally parallel array, spaced laterally apart, and each having an open end and a closed end and consisting of a fluid-impermeable, electronically non-conductive, but ion conductive, material; said fibers passing generally vertically through and being sealingly engaged with said tubesheet body in such disposition that their open ends are coincident with or adjacent to said upper tubesheet face and communicate with said tank, their closed ends depending from said lower face,

(c) a first current collecting/distributing means disposed in but not filling the spaces between said fibers and joined by a first connecting means to one of said leads,

(d) a second current distributing/collecting means joined to the other of said leads by a second connecting means and so located that, when said tank is substantially filled with a liquid, the latter distributing means is in contact with the liquid,

at least one of said first and second connecting means comprising a limp, electrically conductive link,

said casing and upper member being adapted to prevent fluid communication between the tank interior and the portion of the casing interior external to said assembly.

4,332,869

METAL-RICH IRON SULFIDE CATHODE MATERIAL

Nehemiah Margalit, Chester; Ashok V. Joshi, Fishkill; Wesley E. Aker, Chester, all of N.Y., and Dennis P. Johnson, Madison, Wis., assignors to Ray-O-Vac Corporation, Madison, Wis.

Filed Sep. 12, 1980, Ser. No. 186,585
Int. Cl.³ H01M *4/02*
U.S. Cl. 429—194 **6 Claims**

1. A cathode material having a formula of $Fe_{(x+1)}S$ wherein x is a number from about 0.05 to about 0.2, said cathode material being substantially devoid of sulfur-rich phases.

4,332,870

CELL HAVING A GELLED ANODE CONTAINING A POLYHYDRIC ALCOHOL

Frank E. Parsen, Irvington, and Teresita O. Graham, Dobbs Ferry, both of N.Y., assignors to Duracell International Inc., Bethel, Conn.

Division of Ser. No. 106,995, Dec. 26, 1979, Pat. No. 4,288,913. This application Mar. 9, 1981, Ser. No. 241,918
Int. Cl.³ H01M *6/04*
U.S. Cl. 429—206 **8 Claims**

1. An electrochemical cell comprising an anode, an aqueous alkaline electrolyte solution, a separator and a cathode, said anode comprising a gelled anode comprising a mixture of a powdered metal, a polyhydric alcohol, a portion of the aqueous alkaline electrolyte solution, and a gelling agent.

4,332,871

ZINC ELECTRODE WITH CEMENT ADDITIVE

Allen Charkey, Brookfield, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed Sep. 15, 1980, Ser. No. 187,335
Int. Cl.³ H01M *4/36*
U.S. Cl. 429—217 **22 Claims**

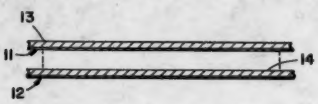
1. A zinc electrode comprising a zinc active material and a cement additive distributed therein, said cement additive comprising 70–80% calcium silicate, 1–10% calcium aluminate, 5–12% calcium aluminum ferrite, 6–10% other constituents including calcium sulfate.

4,332,872

OPTICALLY ANNOTATABLE RECORDING FILM

Arthur R. Zingher, 40 Winthrop Ave., Elmsford, N.Y. 10523

Filed Sep. 19, 1980, Ser. No. 188,858
Int. Cl.³ G03C 11/00, 11/02
U.S. Cl. 430—8 15 Claims



1. A microfiche film structure for use in a bi-directional microfiche apparatus which projects an image from said film structure and which also includes a laser marking light source for optically annotating said image, including: a primary image recording medium for photographically forming and photochemically fixing a primary image in said film structure; a secondary image recording medium of a separate and distinct character from said primary image recording medium, said secondary image recording medium being disposed in said film structure and being responsive to said laser marking light to record annotations to said primary image, said annotations being recorded in congruent, overlying registration with said primary image.

4,332,873

MULTILAYER PRINTING PLATES AND PROCESS FOR MAKING SAME

Norman E. Hughes, Landenberg, Pa., and Bernard J. Scheve, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 68,833, Aug. 22, 1979, Pat. No. 4,266,007, which is a continuation-in-part of Ser. No. 917,999, Jun. 22, 1978, abandoned. This application Dec. 15, 1980, Ser. No. 216,111
Int. Cl.³ G03C 1/76
U.S. Cl. 430—15 2 Claims

1. In a process of making a printing plate having multiple layers of differing moduli from photopolymerizable material, the improvement comprising doctoring over a supported photographic negative which is protected by a cover film a printing layer of a liquid photopolymerizable composition comprising a printing layer of a liquid photopolymerizable composition comprising at least one addition polymerizable compound having a normal boiling point above about 100° C., a molecular weight of less than about 1500 and at least one ethylenically unsaturated group capable of forming a high polymer by photoinitiated polymerization; at least one unsaturated polymeric material which is soluble in said addition polymerizable compound; at least one polymerization inhibitor; and a photoinitiator; doctoring onto the liquid printing layer a base layer of a different liquid photopolymerizable composition comprising at least one addition polymerizable compound having a normal boiling point above about 100° C., a molecular weight of less than about 1500 and at least one ethylenically unsaturated group capable of forming a high polymer by photoinitiated polymerization; at least one unsaturated polymer material which is soluble in said addition polymerizable compound; at least one polymerization inhibitor; and an amount of photoinitiator greater than that in said printing layer such that said base layer has a photopolymerization rate about 1.5 to about 250 times that of said printing layer, said printing layer and base layer compositions having differing crosslinkability such that, upon exposure to actinic light, the layers have moduli differing by at least about 50 p.s.i.

4,332,874

PHOTOSENSITIVE BIS-AZIDE COMPOSITION WITH ACRYLIC TERPOLYMER AND PATTERN-FORMING METHOD

Nobuaki Hayashi, Hachioji; Motoo Akagi, Hinodemachi; Kiyoshi Miura, Mobara, and Yoshiyuki Odaka, Isumimachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,265
Claims priority, application Japan, Oct. 24, 1979, 54-136413
Int. Cl.³ G03C 1/71, 1/78, 5/00
U.S. Cl. 430—28 9 Claims

1. A photosensitive composition which comprises:

an admixture of (1) a copolymer prepared by addition polymerization of a monomeric mixture containing acrylamide, diacetoneacrylamide and at least one vinyl monomer containing a sulfonic acid group or salt thereof, with the monomer molar ratio of acrylamide to diacetoneacrylamide being 1.0 to 3.0 and the monomer molar ratio of the at least one vinyl monomer to diacetoneacrylamide being from about 0.01 to 0.4 in the copolymer

and

(2) a water-soluble photosensitive aromatic bisazide compound, with the amount of said bisazide compound being 1 to 50% by weight based on the copolymer.

2. A pattern-forming method comprising the steps of forming on a substrate a film of a photosensitive composition comprising:

an admixture of (1) a copolymer prepared by addition polymerization of a monomeric mixture containing acrylamide, diacetoneacrylamide, and at least one vinyl monomer containing a sulfonic acid group or salt thereof, with the monomer molar ratio of acrylamide to diacetoneacrylamide being 1.0 to 3.0 and the monomer molar ratio of the at least one vinyl monomer to diacetoneacrylamide being from 0.01 to 0.4 in the copolymer and

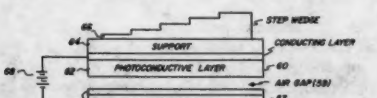
(2) a water-soluble photosensitive aromatic bisazide compound, with the amount of the bisazide compound being 1 to 50% by weight based on the copolymer; irradiating the film with a predetermined pattern of light under such conditions that the Schwarzschild's constant p is in the range of $0<p<0.76$; and developing the film to form a pattern having an area substantially equal to or smaller than the area of the light irradiation region.

4,332,875

POLYMERIC ELECTRICALLY ACTIVE CONDUCTIVE LAYER FOR ELECTRICALLY ACTIVATABLE RECORDING ELEMENT AND PROCESS

Mark Lelental, Penfield, and Richard C. Sutton, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

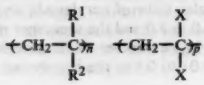
Continuation-in-part of Ser. No. 156,712, Jun. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 124,189, Feb. 25, 1980, abandoned. This application Jan. 29, 1981, Ser. No. 229,701
Int. Cl.³ G03G 5/026, 5/04
U.S. Cl. 430—45 28 Claims



1. In an electrically activatable recording element comprising an electrically conductive support having thereon, in sequence:

(a) a polymeric electrically active conductive layer,

(b) an electrically activatable recording layer comprising:
(A) a dye-forming coupler, and
(B) an oxidation-reduction combination comprising:
(i) an organic silver salt oxidizing agent consisting essentially of a silver salt of a 1,2,4-mercaptotriazole derivative with
(ii) a reducing agent which, in its oxidized form, forms a dye with said dye-forming coupler,
(c) a photoconductive layer separated from (b) by an air gap of up to 20 microns, and
(d) an electrically conductive layer, the improvement wherein the polymeric electrically active conductive layer comprises a vinyl addition polymer comprising recurring units represented by the structure:



wherein R^1 is hydrogen or methyl; R^2 is aryl containing 6 to 10 carbon atoms, or:

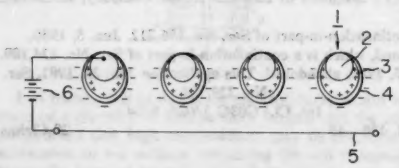
wherein R^3 is alkyl containing 1 to 20 carbon atoms or aryl containing 6 to 10 carbon atoms, each X is bromine or chlorine; n represents 15 to 50 weight percent, and p represents 50 to 85 weight percent of said vinyl addition polymer.

4,332,876

ELECTROPHOTOGRAPHIC SCREEN

Katsunobu Ohara; Keiji Tanaka, both of Kawasaki; Yujiro Ando, Yokohama, and Inao Moriyama, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 771,309, Feb. 23, 1977, which is a continuation of Ser. No. 480,280, Jun. 17, 1974, abandoned. This application Jun. 24, 1980, Ser. No. 162,654
Claims priority, application Japan, Jun. 19, 1973, 48-69343; Aug. 1, 1973, 48-87068; Aug. 1, 1973, 48-87069; Aug. 1, 1973, 48-87070; Nov. 2, 1973, 48-123670; Jan. 29, 1974, 49-12412
Int. Cl.³ G03G 5/04
U.S. Cl. 430—68 **9 Claims**



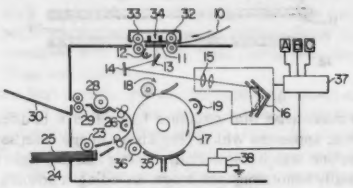
1. A photosensitive perforate screen comprising:
an electrically conductive base having a plurality of fine openings;
a photoconductive layer formed on said base; and
an insulating layer, capable of supporting an electric charge, formed on said photoconductive layer;
wherein one side of said screen includes a conductive outer surface, while said insulating layer defines the outer surface at least on the opposite side of said screen and extends continuously therefrom to the inside peripheries of the screen openings, and wherein said insulating layer is capable of retaining electric charges of opposite polarities on the opposite sides thereof even when exposed to light.

4,332,877

ELECTROPHOTOGRAPHIC COPYING METHOD

Yasuhiro Tabata, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 108,150
Claims priority, application Japan, Dec. 29, 1978, 53/165267
Int. Cl.³ G03G 13/06, 13/10
U.S. Cl. 430—103 **3 Claims**



1. In an electrophotographic copying method capable of producing copies of a magnification different than that of an original, including the steps of moving a uniformly-charged photosensitive member past an exposure station, moving an optical system relative the original to form a light image thereof at said exposure station to form an electrostatic latent image on said photosensitive member, varying the position and speed of said optical system relative the original for varying the magnification of the latent electrostatic image formed on the photosensitive member, and developing said electrostatic latent image by contacting it with developer in the presence of a developing electrode, the improvement including the step of varying the potential of said developing electrode in accordance with the magnification of said electrostatic latent image.

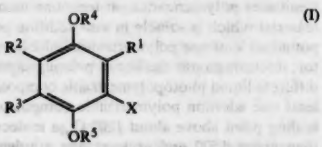
4,332,878

PHOTOGRAPHIC IMAGE-FORMING METHOD

Yoshitaka Akimura; Shigeo Hirano; Hiroyuki Mifune, and Eiichi Okutsu, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 30, 1981, Ser. No. 259,277
Claims priority, application Japan, Apr. 30, 1980, 55-57269
Int. Cl.³ G03C 5/30, 1/06
U.S. Cl. 430—264 **21 Claims**

1. A method for forming a photographic image which comprises imagewise exposing a silver halide photographic light-sensitive element having a silver halide emulsion layer of substantially the surface latent image type, said silver halide emulsion layer or at least one member of other hydrophilic colloid layers containing a compound represented by formula (I) below, and developing the exposed light-sensitive element in the presence of a compound represented by formula (II) below:



wherein
X is an indazole radical which is linked to the benzene nucleus through the nitrogen atom at the 1- or 2-position thereof and which may be substituted;
R^1, R^2 and R^3 may be the same or different and each represents a hydrogen atom, an alkyl group, an aryl group, an alkylthio group, an arylthio group, a halogen atom, a hydroxy group, an alkoxy group, an aryloxy group, an acyl group, an alkoxycarbonyl group, an amido group, a sulfonamido group, a carbamoyl group, a sulfamoyl

group, a heterocyclic radical, or X, and R^2 and R^3 may combine together to form a ring;

R^4 and R^5 each represents a hydrogen atom or a group which is hydrolyzed in the presence of an alkali;

$$R^6NHNHCOR^7 \quad \text{(II)}$$

wherein R^6 represents an aryl group which may be substituted, and R^7 represents a hydrogen atom, an aryl group which may be substituted, or an alkyl group which may be substituted.

4,332,879

PROCESS FOR DEPOSITING A FILM OF CONTROLLED COMPOSITION USING A METALLO-ORGANIC PHOTORESIST

Antonio C. Pastor, Santa Monica; Ricardo C. Pastor, Manhattan Beach; Gregory L. Tangonan, Oxnard, and Shi-Yin Wong, Santa Monica, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 1, 1978, Ser. No. 965,651
Int. Cl.³ B05D 5/06, 3/06, 5/12
U.S. Cl. 430—272 **9 Claims**

1. A process for depositing a film of controlled composition on a substrate comprising the steps of:

(a) providing a polymerizable material which is suitable for use as a photoresist;

(b) introducing into said polymerizable material a predetermined amount of a chosen substance containing a selected cation and which is capable of being chemically linked to said polymerizable material upon polymerization, to form a cation-containing polymerizable material;

(d) polymerizing said cation-containing polymerizable material to form a metallo-organic photoresist of chosen composition having said cation substitutionally incorporated therein; and

(c) depositing said cation-containing polymerizable material on said substrate to a predetermined thickness;

(e) heating said deposited metallo-organic photoresist in a selected reactive atmosphere to elevated temperatures sufficient to combust the organic portion of said metallo-organic photoresist and to leave behind on said substrate an inorganic residue which contains said selected cation.

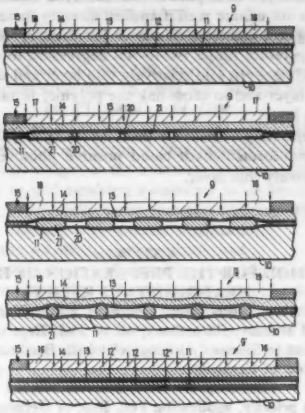
4,332,880

IMAGING FILM WITH IMPROVED PASSIVATING LAYERS

Masatsugu Izu, Birmingham, and Vincent D. Cannella, Detroit, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 72,438, Sep. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 827,470, Aug. 25, 1977, Pat. No. 4,211,838. This application Aug. 4, 1980, Ser. No. 173,046
Int. Cl.³ G03C 1/76
U.S. Cl. 430—272 **13 Claims**

1. In a dry process dispersion imaging film comprising a transparent substrate, a solid, high optical density and substantially opaque layer of a dispersion imaging material deposited on said substrate, said substantially opaque layer of dispersion imaging material, upon application of energy in an amount sufficient to increase the absorbed energy in the material above a certain critical value, being capable of changing to a substantially fluid state in which the surface tension of the material acts to cause the substantially opaque layer of dispersion material where subject to said energy to disperse and change to a discontinuous layer, the improvement wherein there is located on at least the outer side of said opaque layer of dispersion material a substantially transparent passivating layer for isolating said opaque imaging layer from the surrounding atmosphere, said passivating layer comprising a substantially transparent continuous amorphous film having a thickness no greater than about 500 A°, said amorphous film comprising at least about 50 atomic weight percent of a Group IV oxide (except oxides of carbon) alloyed or mixed with one or more



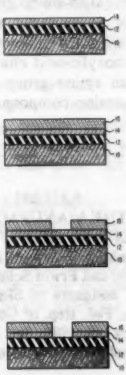
other different oxides of a metal or an inorganic semiconductor or a metal fluoride which stabilizes the amorphous character of said Group IV oxide.

4,332,881

RESIST ADHESION IN INTEGRATED CIRCUIT PROCESSING

Theodore A. Shankoff, Mendham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 28, 1980, Ser. No. 172,836
Int. Cl.³ G03C 5/00
U.S. Cl. 430—311 **1 Claim**



1. A method for improving positive photoresist adhesion during an integrated circuit fabrication sequence that comprises the steps of

applying resist material to an underlying layer included in an integrated circuit structure,

establishing a prescribed pattern in said resist material to serve as a mask for processing said underlying layer,

and processing said underlying layer through said mask in accordance with said fabrication sequence to define in said layer a pattern corresponding to the pattern established in said resist material thereby to define a feature of said integrated circuit in said underlying layer,

wherein the improvement in said method resides in said applying step, which applying step comprises

depositing a relatively thin 0.0075-to-0.05 μm-thick layer of

a solvent thinned phenol-formaldehyde polymer positive photoresist on an underlying layer to which a relatively thick layer of a phenol-formaldehyde-based photoresist does not adhere well if applied directly thereto,

heating said relatively thin layer for about 60 minutes in the temperature range 140-to-300 degrees C. to enhance the bond between said relatively thin layer and said underlying layer and to cross-link the polymer in said relatively thin layer,

and depositing a relatively thick 0.4-to-2 μm-thick layer of a phenol-formaldehyde-based positive photoresist on said relatively thin layer.

4,332,882

METHOD FOR THE PREPARATION OF HIGHLY HEAT-RESISTANT RELIEF

Hellmut Ahne, Röttenbach; Eberhard Kühn, Hemhofen, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,463

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933871

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—322 **7 Claims**

1. In a method for the preparation of highly heat-resistant relief structures wherein radiation-sensitive soluble polymer precursor stages are applied in the form of a film or a foil on a substrate; the film or the foil is irradiated through negative patterns with actinic light or by deflecting a light, electron or ion beam; and the non-irradiated film or foil portions removed, the improvement comprising utilizing a precursor stage comprising a member selected from a polyimidazole and a polyimidazopyrrolone precursor in the form of an addition product of an olefinically unsaturated monoepoxide and a product selected from (a) an amino group-containing polycondensation product of an aromatic and/or heterocyclic tetraamino compound with a member selected from the group consisting of a dicarboxylic-acid chloride and a dicarboxylic acid ester and (b) an amino group-containing polyaddition product of said tetraamino compound and a tetracarboxylic-acid dianhydride.

4,332,883

METHOD FOR THE MANUFACTURE OF HIGHLY HEAT-RESISTANT RELIEF STRUCTURES

Hellmut Ahne, Röttenbach; Eberhard Kühn, Hemhofen; Roland Rubner, Röttenbach, and Erwin Schmidt, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,472

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933805

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—322 **8 Claims**

1. In a method for the manufacture of a highly heat-resistant relief structure wherein a radiation-sensitive soluble polymer precursor stage is applied in the form of a layer or foil on a substrate; the layer or the foil is irradiated through negative patterns with actinic light or by deflecting a light, electron or ion beam; and the non-irradiated layer or foil portions are removed, the improvement comprising utilizing as said precursor stage a polyoxazole precursor in the form of an addition product of (a) an olefinically unsaturated monoepoxide and (b) a hydroxyl group-containing polycondensation product of (1) an aromatic and/or heterocyclic dihydroxydiamino compound and (2) a member selected from dicarboxylic acid chloride and dicarboxylic acid ester.

4,332,884

PHOTO-SENSITIVE AND HEAT-SENSITIVE COMPOSITION AND RECORDING ELEMENT USING SAME

Koji Uji-Ie, Kawasaki; Masaakira Umehara; Kiyoshi Taniguchi, both of Yokohama, and Makoto Kunikane, Chigasaki, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

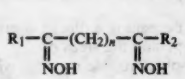
Filed Nov. 3, 1980, Ser. No. 203,164

Claims priority, application Japan, Nov. 14, 1979, 54-147562

Int. Cl.³ G03C *1/52, 1/727*

U.S. Cl. 430—338 **18 Claims**

1. A photo-sensitive and heat-sensitive composition consisting essentially of a photooxidant which produces an oxidizing substance when irradiated by ultraviolet radiation, a color-generator capable of being oxidized by said oxidizing substance to generate a visible color, an acid for promoting said color generation, a hydrogen donator, a photoreductant which when irradiated by visible light produces a reducing substance in the presence of said hydrogen donator, a cobalt (III) complex which when heated is reduced by said reducing substance so as to produce ammonia or an amine, and a chelating agent having the formula:



wherein n is an integer of 0 to 3, and R_1 and R_2 are alkyl, aryl or aralkyl.

4,332,885

PHOTOGRAPHIC SENSITIVE MATERIALS FOR COLOR DIFFUSION TRANSFER PROCESS

Hideki Ohmatsu, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 7, 1981, Ser. No. 251,801

Claims priority, application Japan, Apr. 7, 1980, 55-45413

Int. Cl.³ G03C *1/76*

U.S. Cl. 430—506 **4 Claims**

1. A photographic sensitive material for a color-diffusion transfer process comprising:

a support;

a red-sensitive emulsion layer on said support;

a green-sensitive emulsion layer on said support; and

a blue-sensitive emulsion layer on said support,

wherein one of said layers is comprised of a plurality of additional layers including a plurality of direct reversal photographic emulsion layers having higher and lower sensitivity which were not previously fogged, and further wherein said direct reversal photographic emulsion layer having lower sensitivity has a gradation of 1.8 or more.

4,332,886

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL INCLUDING AN ORGANIC SPIROBIS COMPOUND COLOR COUPLER

Kozo Aoki; Tetsuro Kojima; Nobuo Furutachi, and Satoru Sawada, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

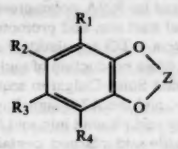
Filed Oct. 8, 1980, Ser. No. 195,166

Claims priority, application Japan, Oct. 8, 1979, 54-129773

Int. Cl.³ G03C *1/10*

U.S. Cl. 430—551 **28 Claims**

1. A color photographic light-sensitive material including a color coupler and containing, in a photographic layer thereof, at least one compound represented by the formula (I), or at least one bis-compound, including a spirobis-compounds, thereof



(I)

where

Z represents an alkylene group having from 1 to 3 carbon atoms or an alkylene group having from 1 to 3 carbon atoms and substituted with one or more of a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, a =S group, or a =O group; and

R_1, R_2, R_3 and R_4 each represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an acyl group, an acylamino group, a sulfonamido group, a diacylamino group, a carboxy group, a sulfo group, or a hydroxy group, or,

R_1 and R_2 or R_2 and R_3 together form a group represented by

wherein Z has the same meaning as Z in formula (I), or form a 5-membered or 6-membered carbocyclic ring or heterocyclic ring.

2. A color photographic light-sensitive material as in claim 1, wherein the substituent for Z is an alkyl group having from 1 to 32 carbon atoms, an aryl group having from 6 to 32 carbon atoms, an alkoxy group having from 1 to 32 carbon atoms, or an aryloxy having from 6 to 32 carbon atoms.

4,332,887

METHOD FOR PREPARING PHOTOSENSITIVE SILVER HALIDE EMULSIONS

Arthur M. Gerber, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 6, 1980, Ser. No. 194,561
Int. Cl.³ G03C *1/02, 1/28*
U.S. Cl. 430—567 9 Claims

1. The method for forming a photosensitive silver halide emulsion which comprises the steps of forming photosensitive silver halide grains in the presence of a water-soluble thiocyanate compound with a halide/silver molar ratio ranging from not more than about a 5% molar excess of halide to not more than about a 25% molar excess of silver; ripening said grains subsequent to the forming of said grains in the presence of said water-soluble thiocyanate compound wherein said water-soluble thiocyanate compound is employed at a level of about 0.015 to 1.5 moles per mole of silver, and substantially in the absence of any other ripening agent, for a time sufficient to grow said grains to a predetermined grain size distribution; removing said water-soluble thiocyanate compound subsequent to grain growth and removing any silver thiocyanate formed during precipitation.

4,332,888

METHOD FOR STABILIZING AND SPECTRALLY SENSITIZING PHOTOSENSITIVE SILVER HALIDE EMULSION

Leo D. Corben, Swampscott, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 962,339, Nov. 20, 1978, abandoned.
This application Feb. 15, 1980, Ser. No. 121,800
Int. Cl.³ G03C *1/34, 1/08*
U.S. Cl. 430—570 16 Claims

1. A method for stabilizing a photosensitive silver halide emulsion which comprises the following steps, in sequence:

(a) adding to said emulsion a stabilizer in an amount sufficient to substantially arrest chemical ripening but insufficient to interfere with spectral sensitization;

(b) spectrally sensitizing said emulsion; and

(c) adding to said spectrally sensitized emulsion a water-soluble bromide salt, 1-phenyl-5-mercaptotetrazole and a stabilizer selected from the group consisting of an hydroxy triazaindene, an amino triazaindene, an hydroxy tetrazaindene, an amino tetrazaindene, an hydroxy pentazaindene and an amino pentazaindene.

4,332,889

POST-ACTIVATION TYPE DRY IMAGE FORMING MATERIAL

Tetsuo Siga; Shozo Kinoshita; Yoshinobu Ito, all of Fuji, and Minoru Akiyama, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1981, Ser. No. 265,011
Claims priority, application Japan, May 23, 1980, 55-67748
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—583 25 Claims

1. A post-activation type dry image forming material comprising:

(a) a silver salt of long chain fatty acid having 16 or more carbon atoms;

(b) a reducing agent for silver ions;

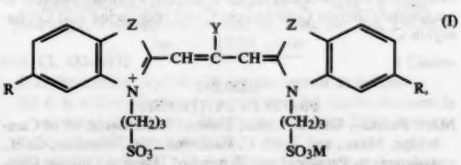
(c) a silver halide component including silver iodide or a silver halide-forming component capable of forming a silver halide component including silver iodide by the reaction thereof with said silver salt of long chain fatty acid (a);

(d) an oxidizing agent for free silver;

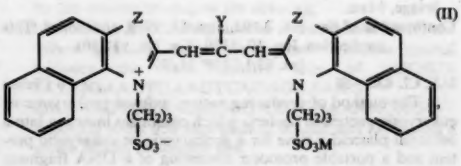
(e) a photoreactive halogeno oxidizing agent;

(f) a binder; and

(g) a spectral sensitizing dye consisting of at least one member selected from the group consisting of those compounds represented by the following formulae:

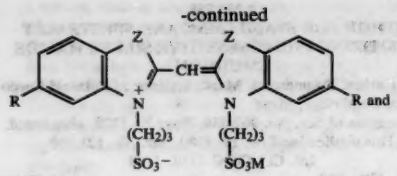


(I)

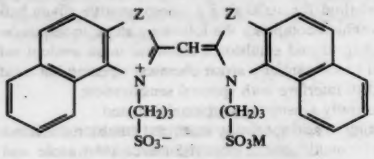


(II)

-continued



(III)



(IV)

wherein each Z independently is sulfur or selenium, Y is hydrogen or methyl, each R independently is hydrogen or chlorine, and M is hydrogen, $HN(C_2H_5)_3$ or sodium.

4,332,890

DETECTION OF *NEISSERIA GONORRHOEAE*

Alan S. Armstrong, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 15, 1978, Ser. No. 905,575

Int. Cl.³ C12Q *1/66*

U.S. Cl. 435—7 **2 Claims**

1. A procedure for identification of a microorganism as *N. gonorrhoeae,* said procedure comprising:

preparing a lysate of the microorganism;

contacting a sample of said lysate with a suspension of discrete particles sensitized with antibodies to *N. gonorrhoeae* strains ATCC 31397, 31398, 31399, 31400, 31401, 31402, 31403, 31404, 31405, 31406, and 31407;

incubating said mixture of lysate and particles; and

determining the presence of agglutination of said incubated mixture indicative of the positive identification of the microorganism as *N. gonorrhoeae.*

4,332,891

PROCESS FOR THE PRODUCTION OF ANTIBIOTIC CEPHAMYCIN C

Takashi Kamogashira; Tsutomu Nishida; Michiharu Sugawara; Tomiyo Nihno, and Setsuko Takegata, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,568

Claims priority, application Japan, Jun. 15, 1979, 54-75830

Int. Cl.³ C12P *35/08*

U.S. Cl. 435—48 **3 Claims**

1. A process for producing Cephamycin C which comprises cultivating Streptomyces sp. OFR 1022 in a culture medium to accumulate therein Cephamycin C and recovering said Cephamycin C.

4,332,892

PROTEIN SYNTHESIS

Mark Ptashne; Gail D. Lauer; Thomas M. Roberts, all of Cambridge, Mass., and Keith C. Backman, San Francisco, Calif., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation of Ser. No. 3,102, Jan. 15, 1979, abandoned. This application Jan. 10, 1980, Ser. No. 111,101

Int. Cl.³ C12P *21/00*

U.S. Cl. 435—68 **6 Claims**

1. The method of producing native, unfused prokaryotic or eukaryotic protein in bacteria which comprises inserting into a bacterial plasmid a gene for a prokaryotic or eukaryotic protein and a portable promoter consisting of a DNA fragment containing a Shine-Dalgarno sequence and a transcription initiation site recognized by RNA polymerase and containing no protein translational start site, said promoter being inserted upstream from a protein ATG translational start site of said gene, at a position to obtain production of said protein, to form a fused gene having said Shine-Dalgarno sequence, said transcription initiation site, and the ATG signalling the start point of translation, inserting said plasmid into said bacteria to transform said bacteria with said plasmid containing said fused gene, and culturing the transformed bacteria to produce said unfused prokaryotic or eukaryotic protein.

4,332,893

PROCESS FOR THE PRODUCTION OF AN INSULIN-PRODUCING CELL LINE OF PANCREATIC BETA CELLS

Ralph A. Rosenberg, 124 Johnson St., Apt. 1-B, Highland Park, N.J. 08904

Filed Jun. 13, 1980, Ser. No. 159,450

Int. Cl.³ C12N *5/02;* C12P *21/00;* C12N *15/00*

U.S. Cl. 435—68 **16 Claims**

1. A process for producing an insulin-producing pancreatic cell line by conditionally transforming pancreatic cells with a temperature sensitive mutant strain of Rous sarcoma virus, said process comprising the steps of

(a) selectively isolating insulin-producing beta cells cells from a pancreas and culturing said insulin-producing cells to produce a homogeneous population thereof;

(b) growing a culture of a mutant strain of Rous sarcoma virus in a manner to produce a supernatant portion which contains the virion of said mutant strain of said virus, said mutant strain of virus containing in the transforming gene thereof a temperature sensitive lesion which causes said transforming gene to be expressed at a permissive environmental temperature and to be inactivated at a non-permissive environmental temperature;

(c) harvesting the virion-containing supernatant portion of said mutant virus culture including said temperature sensitive transforming gene and infecting said insulin-producing pancreatic cells with said virion of said mutant virus so that the expression of said temperature sensitive transforming gene causes the conditional transformation of said insulin-producing pancreatic cells at said permissive temperature;

(d) culturing the resulting infected insulin-producing pancreatic cells at the permissive temperature for the expression of the temperature sensitive transforming gene of said mutant virus strain in said insulin-producing pancreatic cells for a time sufficient to cause the conditional transformation of said insulin-producing pancreatic cells by said temperature sensitive transforming gene and to produce a desirably large population of said insulin-producing pancreatic cells; and

(e) shifting the temperature of the culture produced in step (d) to the nonpermissive temperature for the inactivation of the temperature sensitive transforming gene of said mutant virus strain in said insulin-producing pancreatic cells for a time sufficient to cause said conditionally transformed insulin-producing pancreatic cells to revert to a non-transformed state and to produce insulin.

4,332,894

CONVERSION OF GUAR GUM TO GEL-FORMING POLYSACCHARIDES BY THE ACTION OF α-GALACTOSIDASE

Roy L. Whistler, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 15, 1980, Ser. No. 178,507

Int. Cl.³ C12P *19/04, 19/14*

U.S. Cl. 435—99 **2 Claims**

1. A method of treatment of guaran having a chain or backbone to which side groups are attached, the treatment to ren-

der the guaran chain more susceptible to association intermolecularly with other guaran chains, thereby promoting gel formation in the treated guaran, the treatment including the steps of:

isolating an enzyme or mixture of enzymes which act to break the bonds between the side groups and the guaran chain;

treating the guaran with the enzyme or enzymes to break such bonds and remove the side groups from the guaran chain to denude zones of desired length along the guaran chain; and

removing the enzyme or enzymes from active contact with the guaran when zones of desired length have been established to prevent further enzyme activity on the partially denuded guaran.

4,332,895

THERMAL STABLE BETA-GALACTOSIDASE

Mansel W. Griffiths, Kilmarnock; David D. Muir, Irvine, and John D. Phillips, Prestwick, all of Scotland, assignors to National Research Development Corp., London, England

Filed Jun. 5, 1979, Ser. No. 45,654

Claims priority, application United Kingdom, Jun. 7, 1978, 26503/78

Int. Cl.³ C12P *19/02*; C12N *11/02, 9/38*

U.S. Cl. 435—105 **9 Claims**

1. A beta-galactosidase in substantially purified form having an activity half life of at least 5 hours at 55° C., at least 3 hours at 60° C., at least 1 hour at 65° C. and at least 10 minutes at 70° C., as measured using ONPG as substrate, said enzyme being derived from a strain of *Bacillus Stearothermophilus* identified as NCIB 11407, NCIB 11408, NCIB 11409, NCIB 11410, NCIB 11411, NCIB 11412 or NCIB 11413.

4,332,896

PROCESS FOR PRODUCING CEPHALOSPORIN ANALOGS

Yukio Hashimoto, Yamato; Kazuo Kimura, Hofu; Tadashi Hirata, Yokohama; Takehiro Ogasa; Shigeru Kobayashi, both of Machida, and Ikuo Matsukuma, Yokkaichi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

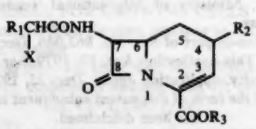
Filed Apr. 14, 1980, Ser. No. 140,184

Claims priority, application Japan, Apr. 14, 1979, 54-45897; Nov. 1, 1979, 54-140476

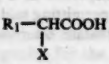
Int. Cl.³ C12P *17/18*

U.S. Cl. 435—119 **5 Claims**

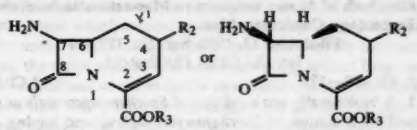
1. A process for producing optically active compounds of the formula



wherein R_1 represents a substituted or unsubstituted saturated or unsaturated six-membered carbocyclic or five-membered heterocyclic group, R_2 represents a hydrogen or a lower alkyl group, R_3 represents a hydrogen or a protective group of carboxylic acid, X represents a hydrogen, a lower alkyl group, a hydroxy group, a carboxy group or an amino group, and the hydrogens at the 6- and 7-positions have cis configuration and salts thereof which comprises reacting an α,α-disubstituted carboxylic acid represented by the formula



wherein R_1 and X have the same significance as defined above or a reactive derivative thereof and a compound represented by the formula



wherein R_2 and R_3 have the same significance as defined above in the presence of an enzyme capable of catalyzing optically selective acylation and derived from a microorganism belonging to the genus Pseudomonas, Xanthomonas, Escherichia, Aeromonas, Achromobacter, Arthrobacter, Acetobacter, Alcaligenes, Kluyvera, Gluconobacter, Clostridium, Comamonas, Corynebacterium, Sarcina, Staphylococcus, Spirillum, Bacillus, Flavobacterium, Brevibacterium, Protaminobacter, Beneckea, Micrococcus, Proteus, Mycoplana or Rhodopseudomonas and thereafter isolating said optically active compound from the reaction mixture.

4,332,897

NOVEL BACTERIOPHAGE AND METHOD FOR PREPARING SAME

Eiichi Nakano, Saitama; Narimasa Saito, Noda, and Danji Fukushima, Omiya, all of Japan, assignors to Noda Institute for Scientific Research, Noda, Japan

Filed Apr. 12, 1978, Ser. No. 895,602

Claims priority, application Japan, Apr. 26, 1977, 52/47409

Int. Cl.³ C12N *15/00*

U.S. Cl. 435—172 **17 Claims**

1. A temperate-bacteriophage whose DNA molecule is endonuclease-sensitive only in the DNA region carrying genetic information for the production of coat proteins.

9. A method for preparing a novel bacteriophage, which comprises making a bacteriophage of the lambdoid phage species endonuclease-resistant and mating the resulting bacteriophage with a lambdoid phage having endonuclease-sensitivity in the DNA region carrying genetic information for the production of coat proteins to obtain a bacteriophage having endonuclease-sensitivity only in the DNA region carrying genetic information for the production of coat proteins.

4,332,898

HYBRID PLASMID AND PROCESS OF MAKING SAME

Fritz Reusser, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 152,347, May 22, 1980, abandoned. This application Jun. 16, 1980, Ser. No. 159,852

Int. Cl.³ C12N *15/00*

U.S. Cl. 435—172 **6 Claims**

2. Hybrid plasmid pUC1021 characterized as follows:

(a) it is a hybrid plasmid which has the entire nucleotide sequence of plasmid pBR322 and a foreign DNA insert at the HindIII site of pBR322;

(b) said DNA insert, and direction of insertion, being shown by the restriction map in the drawing;

(c) said DNA insert being further characterized by (1) the following partial nucleotide sequence which is located between the two HindIII sites of pUC1021: CCGGGAAGTGAAGTCAGAGAAAAG-GAAAAGTGCGAGAGGGAAGGAAAAAGAGG-GGA;(2) being 350 base pairs in length; and (3) having a single MboII restriction site.

4,332,899

PROCESS FOR PRODUCING MALTASE

Charles L. Cooney, Brookline, and Eugene J. Schaefer, Somerville, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 13, 1980, Ser. No. 177,709
Int. Cl.³ C12N *15/00, 9/26*
U.S. Cl. 435—172 7 Claims

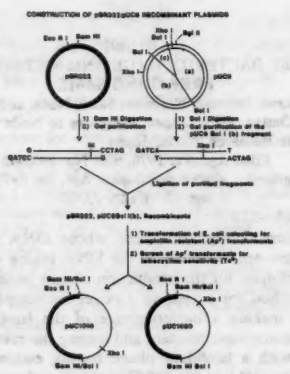
1. A biologically pure culture of *Saccharomyces italicus* obtained by mutation of *Saccharomyces italicus* and having the property of producing maltase while growing on all carbon sources selected from the group consisting of maltose, glycerol, acetate, fructose, glucose and sucrose.

4,332,900

CONSTRUCTION OF CO-INTEGRATE PLASMIDS FROM PLASMIDS OF STREPTOMYCES AND ESCHERICHIA

Jack J. Manis, Portage, and Sarah K. Highlander, Oshtemo Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 1, 1980, Ser. No. 192,727
Int. Cl.³ C12N *15/00, 1/20, 1/00;* C12P *19/34*
U.S. Cl. 435—172 14 Claims



6. A process for cloning ca. 4.2 kb BclI restriction endonuclease fragment of plasmid pUC6 into a suitable host which comprises:

(a) linearizing plasmid pBR322 by BamHI enconuclease to obtain linear plasmid DNA;

(b) linearizing plasmid pUC6 by BclI endonuclease to obtain linear plasmid DNA;

(c) ligating said linear plasmid DNA from pBR322 and pUC6 to obtain cointegrate plasmids pUC1019 and pUC1020; and,

(d) transforming said cointegrate plasmids into said suitable host.

4,332,901

CLONING VECTOR

Richard N. Goldstein, Cambridge, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed Feb. 27, 1978, Ser. No. 881,170
Int. Cl.³ C12N *7/00, 15/00*
U.S. Cl. 435—235 4 Claims

1. A cloning vector for use in recombining DNA which is a mutant of bacteriophage P4 wt or P4 vir_1 characterized in that it has plaque forming units appearing, in a cesium chloride equilibrium density gradient at 24° C., in the density range from 1.42 to 1.35 g/ml and displaying a density profile of plaque forming units having three peaks at about 1.42, 1.39 and 1.35 g/ml respectively.

4,332,902

ANTIBIOTIC SUBSTANCE

Mamoru Arai; Akio Torikata; Ryuzou Enokita; Tatsuo Haneishi, and Mutsuo Nakajima, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Division of Ser. No. 41,501, May 22, 1979. This application Oct. 17, 1980, Ser. No. 197,788
Claims priority, application Japan, May 24, 1978, 53/62042
Int. Cl.³ C12N *1/20;* C12P *1/06;* C12R *1/045*
U.S. Cl. 435—253 1 Claim

1. A biologically pure culture of *Actinoplanes nov. sp.* Strain No. 41042, NRRL-11462, said culture being capable of producing Mycoplanecin.

4,332,903

MEDIA MANIPULATION FOR PREPARING BIOLOGICALLY ACTIVE HOLLOW MYCELIAL PELLETS

Cheng-Shung Gong; Li-Fu Chen, and George T. Tsao, all of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 1, 1980, Ser. No. 174,455
Int. Cl.³ C12N *1/14*
U.S. Cl. 435—254 5 Claims

1. A process for the preparation of biologically active hollow fungal mycelial pellets having an outer surface of structural integrity which comprises the steps of:

(a) innoculating a medium solution with mycelia fungal spores, said medium solution containing a limited amount of nutrient sufficient only to support the growth of said spores to form tiny cell aggregates having a diameter of less than about 2 mm;

(b) incubating the innoculated solution under conditions to limit the vegetative growth of said spoes to a diameter less than 2 mm until said spores form said aggregates;

(c) adding to the aggregates further nutrient to support vigorous vegetative growth of the mycelia; and

(d) incubating the aggregates under agitation for a period of time sufficient to allow the mycelia of the fungi to develop a porous spherical webbed mycelial layer thereby forming a hollow fungal mycelial pellet having an outer surface of structural integrity.

4,332,904

BIOCHEMICAL TREATMENT BY MICROORGANIC METHOD

Ryuichiro Kurane; Tomoo Suzuki, and Yoshimasa Takahara, all of Chiba, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Continuation-in-part of Ser. No. 863,046, Dec. 21, 1977, abandoned. This application Apr. 17, 1979, Ser. No. 30,766
Claims priority, application Japan, Dec. 25, 1976, 51/157017
The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.
Int. Cl.³ C12N *1/20;* C12P *7/50;* C02F *3/00*
U.S. Cl. 435—262 3 Claims

1. A method of conducting a biochemical reaction to dispose of a phthalate ester with a microorganism comprising:

filling a vessel capable of passing liquids therethrough with a hydrophilic support thereby forming a packed bed of said support having a pH in the range from 3 to 9 and which has the capability of retaining and promoting the cultivation of a microorganism;

inoculating said support with *Nocardia erythropolis;*

passing an aqueous disperson of a phthalate ester through said vessel thereby permitting said *Nocardia erythropolis* to react with the phthalate ester as it passes through the packed bed; and

maintaining the growth of the *Nocardia erythropolis* as it continues to react with the passing phthalate ester.

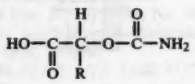
4,332,905

PROCESS FOR PREPARING CARBAMYL DERIVATIVES OF α-HYDROXY ACIDS AND THE CORRESPONDING α-HYDROXY ACIDS

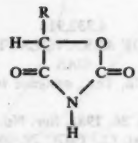
Roberto Olivieri, Mentana; Giancarlo Eletti Bianchi, Rome; Eugenio Fascetti, Rome; Felice Centini, Rome; Ludwig Degen, Rome, and Walter Marconi, San Donato Milanese, all of Italy, assignors to E.N.I. Ente Nozionale Idrocarburi, Rome, Italy

Filed Sep. 17, 1980, Ser. No. 188,074
Claims priority, application Italy, Oct. 17, 1979, 26547 A/79
Int. Cl.³ C07B *19/02*
U.S. Cl. 435—280 6 Claims

1. A process for preparing D-carbamyl-α-hydroxy acids of the formula



consisting of subjecting 5-substituted DL-2,4-oxazolidinediones of the general formula:



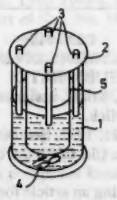
where R is a substituted or unsubstituted aromatic or aliphatic residue, to stereoselective enzymatic hydrolysis in the presence of an agent produced from microorganisms of the following types:
(a) *Agrobacterium radiobacter* NRRL B 11291,
(b) *Bacillus brevis* NRRL B 11080,
(c) *Bacillus stearothermophilus* NRRL B 11079,
(d) Pseudomonas sp CBS 145.75,
(e) Pseudomonas sp CBS 146.75,
(f) Pseudomonas sp ATCC 11299,
(g) *Pseudomonas desmolytica* NC1B8859,
(h) *Pseudomonas fluorescens* ATCC 11250, and
(i) *Pseudomonas putida* ATCC 12633.

4,332,906

VESSEL FOR GROWING CELLS

Robert L. Taylor, Järfälla, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Nov. 14, 1980, Ser. No. 207,025
Claims priority, application Sweden, Nov. 19, 1979, 79095360
Int. Cl.³ C12M *1/34*
U.S. Cl. 435—291 3 Claims



1. In apparatus for use with a commercial fermenter vessel of relatively large liquid capacity for the growing of cells in a relatively small volume of liquid culture fluid, said fermenter vessel being of the type wherein the upper margin of the side wall defines a top opening and a removeable closure lid is provided to close said opening, said closure lid including a plurality of downwardly depending detecting and monitoring means arranged adjacent the peripheral margin of the lid, the improvement which comprises an inner compartment secured to the under side of said lid to depend downwardly into said vessel, the outer wall of said container being spaced from the inner wall of said vessel to define an annular chamber for liquid culture fluid into which said detecting and monitoring means depend having a substantially lesser liquid capacity than that of the commercial fermenter vessel itself.

4,332,907

GRANULATED FOAMED GLASS AND PROCESS FOR THE PRODUCTION THEREOF

Otto A. Vieli, Rhäzüns, Switzerland, assignor to Millcell AG, Sarnen, Switzerland

PCT No. PCT/CH79/00128, § 371 Date Jun. 6, 1980, § 102(e) Date Jun. 2, 1980, PCT Pub. No. WO80/00696, PCT Pub. Date Apr. 17, 1980
PCT Filed Oct. 4, 1979, Ser. No. 195,197
Claims priority, application Switzerland, Oct. 6, 1978, 10440/78
Int. Cl.³ C03C *11/00*
U.S. Cl. 501—39 4 Claims

1. Granulated foamed glass, produced by furnace blowing, characterized in that it has a granulometry of 0.2 to 3 mm, 10^6 to 10^7 cavities per cm^3, a compressive strength of at least about 120 kg/cm^2, a bulk density of 100 to 500 g/liter, and that the diameter of the largest cavities essentially is smaller than 0.1 mm.

4,332,908

FOAMED GRANULAR GLASS

Otto A. Vieli, Rhäzüns, Switzerland, assignor to Millcell AG, Sarnen, Switzerland

PCT No. PCT/CH79/00150, § 371 Date Jul. 30, 1980, § 102(e) Date Jul. 28, 1980, PCT Pub. No. WO80/01162, PCT Pub. Date Jun. 12, 1980
PCT Filed Nov. 27, 1979, Ser. No. 200,506
Claims priority, application Switzerland, Nov. 30, 1978, 12265/78
Int. Cl.³ C03C *11/00*
U.S. Cl. 501—39 4 Claims

1. Foamed granular glass, characterized in that it consists of fragments of a foamed glass element having at least 100,000 cavities per cm^3 of at least approximately the same size; it has a compressive strength greater than 130 kg/cm^2; and it has a specific weight of about 0.25.

4,332,909

SILICON NITRIDE BASED SINTERED PRODUCT AND METHOD OF PRODUCING THE SAME

Katsutoshi Nishida, Yokohamashi, and Toshihiko Ochiai, Yokosukashi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 25, 1980, Ser. No. 180,627
Claims priority, application Japan, Nov. 22, 1979, 54/150738
Int. Cl.³ C04B *35/58, 35/56, 35/50*
U.S. Cl. 501—97 18 Claims

1. A composition consisting essentially of silicon nitride, 0.02 to 10 weight parts per 100 weight parts of silicon nitride of at least one oxide of yttrium, scandium, cerium, lanthanum and the metal oxides of lanthanide series; and 1 to 100 volume parts per 100 volume parts of silicon nitride of at least one metal oxide of iron, nickel and cobalt.

4,332,910

FREE FLOWING METALLURGICAL WELL POWDER

Bruce E. Dunworth, Nashport, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Mar. 2, 1981, Ser. No. 239,196
Int. Cl.[3] C04B *35/48*
U.S. Cl. 501—106 12 Claims

1. A free-flowing, pelletized, metallurgical well powder having essentially the following composition:

natural zircon sand (80 to 200 mesh)	25 to 60% by wt.
zircon, <325 mesh	40 to 70% by wt.
zircon, <600 mesh	0 to 15% by wt.

4,332,911

SULFUR CEMENT-AGGREGATE COMPOSITIONS AND METHODS FOR PREPARING

Edward L. Nimer, San Rafael, and Robert W. Campbell, Lafayette, both of Calif., assignors to Chevron Research, San Francisco, Calif.

Filed Feb. 23, 1981, Ser. No. 237,349
Int. Cl.[3] C04B *33/04*
U.S. Cl. 501—140 22 Claims

1. A sulfur cement and aggregate composition which comprises a sulfur cement and an aggregate, contaminated with up to 5% by weight of an expansive clay, and an amount of a water soluble salt effective to substantially reduce the water expandability of said expansive clay and wherein said salt is dispersed through said aggregate as discrete particles.

4,332,912

SULFUR-AGGREGATE COMPOSITIONS AND METHODS FOR PREPARING

Bradley S. Albom, Richmond, Calif., assignor to Chevron Research, San Francisco, Calif.

Filed Feb. 23, 1981, Ser. No. 237,350
Int. Cl.[3] C04B *33/04*
U.S. Cl. 501—140 26 Claims

1. A sulfur cement-aggregate composition, comprising a sulfur cement and an aggregate, contaminated with up to 5 percent by weight of an expansive clay, which has been pretreated prior to being mixed with said sulfur cement with an amount of a salt solution effective to substantially reduce the water expandability of said clay and wherein said solution has a salt concentration of at least about 2 percent by weight.

4,332,913

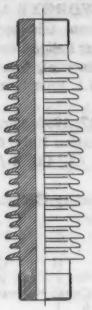
FLUX COMBINATION OF BARIUM OXIDE AND POTASSIUM FELDSPAR FOR HIGH-STRENGTH ALUMINA PORCELAIN ELECTRIC INSULATORS

Peter Bock, Bayreuth, Fed. Rep. of Germany, assignor to Rosenthal Technik AG, Selb, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,812
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1979, 2932914
Int. Cl.[3] C04B *33/26*
U.S. Cl. 501—144 11 Claims

1. An alumina porcelain composition characterized by a low degree of deformation during firing which makes it suitable for large insulator bodies, said composition consisting essentially of: from about 40 to 60% by weight of calcined alumina, from about 15 to 40% by weight of plastic kaolinite-montmorillonite constituents, and from about 20 to 26% by weight of a flux combination consisting essentially of

(a) from about 0.1 to 5% by weight based on the total composition of at least one alkaline earth oxide or a compound which forms the alkaline earth oxide under firing conditions, of which alkaline earth oxide at least about 50% is barium oxide, and



(b) the balance potassium-aluminum silicates.

4,332,914

MANUFACTURE OF ALKANOLS FROM SYNTHESIS GAS

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,527
Int. Cl.[3] C07C *27/06*
U.S. Cl. 518—700 23 Claims

1. A process for making alkanols which comprises of contacting a mixture of CO and H_2 at a pressure of 500 psig or greater and at a temperature of at least 180° C. with a catalyst system comprising a ruthenium-containing compound and a material selected from the group consisting of a halogen-free rhenium-containing compound and a halogen-free manganese-containing compound, dispersed in a low melting quaternary phosphonium base or salt.

4,332,915

PRODUCTION OF ALKANOLS FROM SYNTHESIS GAS

John F. Knifton, and Jiang-Jen Lin, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 2, 1981, Ser. No. 279,885
Int. Cl.[3] C07C *27/06*
U.S. Cl. 518—700 17 Claims

1. A process for making alkanols which comprises contacting a mixture of CO and H_2 at a pressure of 500 psig or greater and at a temperature of at least 150° C. with a catalyst system comprising a ruthenium-containing compound and a halogen-free cobalt-containing compound dispersed in a low melting quaternary phosphonium or ammonium base or salt.

4,332,916

ION EXCHANGE POLYMERS ON IMPROVED POROUS SUBSTRATES

Bruce P. Thill, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 21, 1972, Ser. No. 299,371
Int. Cl.[3] C08B *16/00*
U.S. Cl. 521—25 8 Claims

4. The method of making an article for the concentration and collection of heavy metal ions from dilute aqueous solution which comprises:

preparing an aqueous solution of a crosslinkable water soluble polymeric material, having cation exchange capacity, and a crosslinking agent;

thoroughly wetting a porous sponge formed of regenerated cellulose with the polymer solution to provide at least 100

percent by weight pickup of the solution based on the dry weight of the sponge;

removing from the sponge polymer solution in excess of 100 percent by weight pickup;

and drying and curing the impregnated sponge at a temperature and for a time sufficient to link the polymeric material to the sponge but less than that at which substantial decomposition of the sponge occurs.

4,332,917

METHOD OF PREPARING A POLYMER MIXTURE, FORMED PRODUCTS OBTAINED THEREFROM AND POLYMER ALLOY

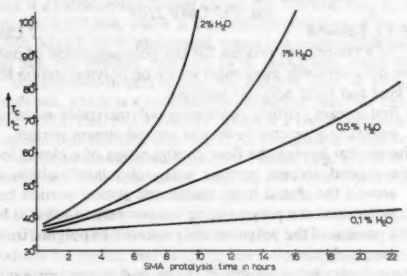
Adolf Heslinga, HD Pijnacker, and Pieter J. Greidanus, MK Leiden, both of Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Dec. 20, 1979, Ser. No. 105,750

Claims priority, application Netherlands, Dec. 22, 1978, 7812529; Dec. 5, 1979, 7908799

Int. Cl.³ C08L *33/02, 1/12;* **A61K** *47/00;* **C08F** *6/10*

U.S. Cl. 521—134 **16 Claims**



1. A method for preparing a polymer alloy which is stable and homogeneous up to high temperatures, containing a component (a) which is one or more polymers of high molecular weight having anhydride groups and a component (b) which is a cellulose ester, comprising forming a solution of component (a) in an organic solvent; adding to such solution component (b), said component (a) in dissolved state being protolyzed in whole or in part prior to or after the addition of component (b) by a protolyzing agent; and removing the solvent; said components (a) and (b) each having a molecular weight of at least 10^4.

4,332,918

NITRILE RUBBER COMPOSITION HAVING HIGH MODULUS

Yoshihide Fukahori; Nobuyuki Kataoka, both of Kodaira, and Shiro Anzai, Higashimurayama, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 164,755, Jun. 30, 1980, abandoned, which is a continuation of Ser. No. 30,809, Apr. 17, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,319

Int. Cl.³ C08F *265/08*

U.S. Cl. 525—259 **5 Claims**

1. A method of preparing a nitrile rubber composition having high modulus and excellent physical properties and abrasion resistance, which comprises kneading at a temperature of 120°-160° C.

(a) a nitrile rubber,

(b) an α,β-ethylenically unsaturated carboxylic acid, wherein the ratio by weight of the component (a) to the component (b) is 100/10 to 100/40,

(c) a divalent metal compound being present in a quantity of 50 to 150 parts by weight per 100 parts by weight of the component (b), and

(d) a secondary aryl amine being present in a quantity of 0.1 to 4.0 parts by weight per 100 parts by weight of the component (a);

cooling the kneaded mass below 100° C.;

adding to the kneaded mass

(e) an organic peroxide being present in a quantity of 0.3 to 5.0 parts by weight per 100 parts by weight of the component (a); and

heating and curing the resulting mixture at a temperature of 110°-180° C.

4,332,919

MULTIPLY GRAFTED ANTISTATIC RESIN COMPOSITION

Akio Kobayashi, and Takeo Ogihara, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,663

Claims priority, application Japan, Jun. 10, 1980, 55-77951

Int. Cl.³ C08F *265/06*

U.S. Cl. 524—504 **8 Claims**

1. An antistatic resin composition comprising a multiply grafted copolymer which in turn comprises:

(a) 5 to 70% of non-elastic trunk polymer particles;

(b) 5 to 60% of an intermediate elastic layer obtained by graft-polymerizing onto the polymer particles a monomer mixture comprising

(i) 50 to 95% of an elasticity-imparting monomer selected from the group consisting of conjugated dienes and acrylates,

(ii) 5 to 50% of a polyalkylene oxide monomer comprising 4 to 500 alkylene oxide groups together with a polymerizable unsaturated double bond at the terminal, and optionally

(iii) 0 to 45% of an ethylenically unsaturated monomer copolymerizable with the elasticity-imparting monomer; and

(c) 5 to 90% of an outer resin layer obtained by graft-polymerizing an ethylenically unsaturated monomer onto the intermediate elastic layer,

all quantities expressed in percentages and parts being by weight.

4,332,920

MOULDABLE AND EXTRUDABLE POLYETHER-ESTER-AMIDE BLOCK COPOLYMERS

Paul Foy, Paris; Camille Jungblut, and Gerard Deleens, both of Orsay, all of France, assignors to ATO Chimie, Courbevoie, France

Continuation of Ser. No. 948,297, Oct. 3, 1978, Pat. No. 4,230,838, which is a continuation of Ser. No. 784,723, Apr. 5, 1977, abandoned, which is a continuation of Ser. No. 582,428, May 30, 1975, abandoned. This application May 16, 1980, Ser. No. 150,288

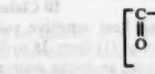
Claims priority, application France, May 31, 1974, 74 18913

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.³ C08L *77/00*

U.S. Cl. 525—408 **34 Claims**

1. A moldable and extrudable polyether-ester-amide block copolymer having the formula:



wherein A is a linear saturated aliphatic polyamide sequence formed from a lactam or amino acid having a hydrocarbon chain containing 4 to 14 carbon atoms or from an aliphatic

C_6–C_{12} dicarboxylic acid and a C_6–C_9 diamine, in the presence of chain-limiting aliphatic carboxylic diacid having 4 to 20 carbon atoms; said polyamide sequence having an average molecular weight of between about 300 and about 15000; and B is a polyether sequence formed from linear or branched aliphatic polyoxyalkylene glycols or mixtures thereof, said polyoxyalkylene glycol having an average molecular weight of from about 200 to about 6000; wherein the proportion by weight of polyoxyalkylene glycol with respect to the total weight of polyether-ester-amide is from about 5 to about 85%; and n indicates a sufficient number of repeating units so that said polyether-ester-amide has an intrinsic viscosity of from 0.8 to 2.05.

4,332,921

POLYCARBONATE/POLYPHOSPHONATE THERMOPLASTIC COMPOSITION

Manfred Schmidt, New Martinsville, W. Va.; Joachim Wank, and Eckart Reese, both of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,946

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1980, 3002550

Int. Cl.³ C08L *69/00*

U.S. Cl. 525—462 **11 Claims**

1. A composition comprising

(a) 40 to 85% by weight of a halogen-free aromatic polycarbonate having a weight-average molecular weight greater than 24,000, and

(b) 60 to 15% by weight of a halogen-free aromatic polyphosphonate having a number-average molecular weight of about 11,000 to 200,000.

4,332,922

PROCESS FOR RENDERING SILICONE RUBBER CONTACT LENSES HYDROPHILIC

Gerhard Kossmehl; Dietrich Quast, both of Berlin, and Horst Schäfer, Aschaffenburg-Obernau, all of Fed. Rep. of Germany, assignors to Titmus Eurocon, Aschaffenburg, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,256

Int. Cl.³ C08L *43/04*; B05D *5/06*

U.S. Cl. 525—478 **13 Claims**

1. Process for rendering silicone rubber contact lenses hydrophilic, which process comprises, as a first step, reacting the silicone rubber with an oligomeric siloxane containing SiH groups in the presence of a catalyst and a solvent which is a weak swelling agent for the silicone rubber and, in a second step, subjecting the resulting equilibrated silicone rubber to

(i) a reaction with an aqueous base in the presence of an alkali metal hydroxide; or

(ii) a silane addition reaction with a reactant containing C═C double bonds.

4,332,923

COMPOSITION FOR COATING HEAT SENSITIVE SUBSTRATES

Dennis H. Rainear, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 23, 1980, Ser. No. 199,391

Int. Cl.³ C08G *59/70, 59/40, 77/46*

U.S. Cl. 525—507 **10 Claims**

1. A composition suitable for coating heat sensitive substrates consisting essentially of a mixture of (1) from 35 to 85 percent by weight of an epoxy resin having an epoxy equivalent weight below 200 and being selected from the group aliphatic, cycloaliphatic and novolac epoxy resins, (2) from 15 to 65 percent by weight of a silanol containing siloxane of the group siloxanes of the formula

and fluid copolymers of $RSiO_{3/2}$ and $(CH_3)_2SiO$ in which R is phenyl or methyl and x has an average value from 3 to 40 and (3) an aluminum catalyst compatible with (1) and combinations of (1) and (2) of the type aluminum chelates of beta-dicarbonyl compounds of the group diketones, ketoesters and diesters and aluminum alkoxides, (3) being in amount sufficient to cure the combination of (1) and (2) within three minutes at 150° C. or less.

4,332,924

RECIRCULATING POLYMERIZATION METHOD AND APPARATUS WITH EVAPORATIVE COOLING

Henry J. Karam, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 922,013, Jul. 5, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,749

Int. Cl.³ C08F *2/02*

U.S. Cl. 526—64 **7 Claims**

1. In a continuous process for the polymerization of one or more polymerizable monomers which on polymerization liberate heat and form polymer wherein,

a first stream portion containing polymerizable material is passed to a reactor to form a second stream portion,

the reactor having the flow configuration of a closed loop,

the second stream portion being circulated within and around the closed loop, the second stream portion being maintained at a polymerizing temperature to cause at least a portion of the polymerizable material to polymerize and form polymer,

the polymer being soluble in the second stream portion, the second stream portion being maintained under

a pressure sufficient to prevent vaporization thereof,

removing a third stream portion from the reactor at a rate about equal to the rate of addition of the first stream portion, the third stream portion containing a greater amount of polymer than the first stream portion,

the improvement which comprises providing within the loop of the reactor a region of lower pressure wherein a portion of the second stream portion vaporizes thereby removing a desired amount of heat from the second stream portion.

4,332,925

MODIFIED POLYAMIDEIMIDE RESINS

Yue-guey L. Lee, Schenectady, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Mar. 30, 1981, Ser. No. 249,210

Int. Cl.³ C08G *18/00*

U.S. Cl. 528—48 **14 Claims**

1. A polyamideimide having relatively low viscosity in high-solids solutions prepared from the following components:

(a) trimellitic anhydride; and

(b) an isocyanate mixture comprising

(i) from 75 to 99 mole % of a diisocyanate of the formula

OCN—R—NCO,

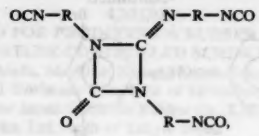
and

(ii) from 25 to 1 mole % of an isocyanate mixture comprising a diisocyanate of the formula

OCN—R—NCO,

and

a triisocyanate of the formula



where R is a divalent hydrocarbon radical of from 2 to 30 carbon atoms, optionally containing —O—, —SO_2— and —S— groups; said components being subjected to polycondensation at a temperature of about 60° C. to 150° C. in the presence of an inert solvent comprising methylpyrrolidone and a catalyst for polycondensation.

4,332,926

PROCESS FOR THE PRODUCTION OF ALKALI METAL SILICATE-ORGANIC PLASTICS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 233,151, Feb. 10, 1981, Pat. No. 4,303,768, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908, which is a continuation-in-part of Ser. No. 36,350, May 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Aug. 10, 1981, Ser. No. 300,303

Int. Cl.³ C08G *18/08, 18/16*

U.S. Cl. 524—650 **19 Claims**

1. The process for the production of polyurethane silicate products by mixing and reacting the following components:

(a) an aqueous alkali metal silicate solution in the amount of 100 parts by weight;

(b) a polymerable unsaturated organic compound in the amount of 5 to 100 parts by weight;

(c) a salt-forming compound in the amount of 1 to 10 parts by weight, consisting of organic acids;

(d) an initiator in a catalytic amount;

(e) 50 to 200 parts by weight of an organic polyisocyanate or polyisothiocyanate;

(f) up to 10% by weight of an initiator and

(g) up to 20% by weight of an emulsifier, percentage based on the weight of Components (a), (b), (c) and (d).

4,332,927

CATALYST-CONTAINING STABLE POLYURETHANE FORMING COMPOSITIONS WHICH ARE NON-CYTOTOXIC WHEN CURED AND SEPARATORY DEVICES EMPLOYING SAME

Dominic Simone, Lincroft, N.J., assignor to CasChem, Inc., Bayonne, N.J.

Filed Nov. 14, 1980, Ser. No. 206,816

Int. Cl.³ C08G *18/24*

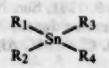
U.S. Cl. 528—58 **15 Claims**

1. A two component polyurethane forming composition which is non-cytotoxic when cured consisting essentially of:

(a) as a first component at least one NOC-terminated prepolymer;

(b) as a second component of at least one polyol; and

(c) an effective catalytic amount of a dialkyltin dicarboxylated compound having the formula:



wherein:

R1 and R2 are linear or branched alkyl groups having from about 8 about 18 carbon atoms per molecule; and

R_3 and R_4 represent carboxylate groups derived from (a) one or more saturated or unsaturated, linear or barnched, aliphatic hydroxy-carboxylic acids having from about 2 to about 18 carbon atoms per molecule; (b) one or more saturated and unsaturated, linear or branched, aliphatic carboxylic acids having from about 14 to about 20 carbon atoms per molecule; and (c) mixtures of (a) and (b);

and wherein said dialkyltin dicarboxylated compound is incorporated into said second component prior to curing and is stable therein.

4,332,928

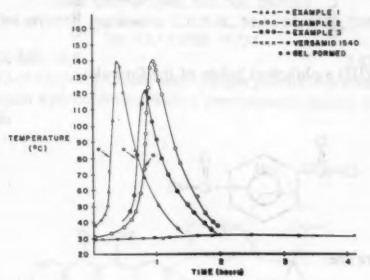
POLYAMINOPOLYAMIDES

Edward W. Kluger, Pauline, and Calvin D. Welch, Greenville, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 3, 1981, Ser. No. 239,958

Int. Cl.³ C08G *59/54*

U.S. Cl. 528—113 **9 Claims**



1. Polyaminopolyamide compounds which comprise the reaction product of at least one carboxylic acid anhydride selected from mono-, di-, and poly-anhydrides with at least one polyamine of the formula:

$$H_2N—R—(NH_2)_x$$

in an amount of at least about 2 moles of polyamine per mole of carboxylic acid anhydride group; wherein R is selected from an aromatic group containing from about 13 to about 34 carbon atoms; a cycloalkyl group containing from about 13 to about 34 carbon atoms; and an alkyl group containing from about 9 to about 25 carbon atoms, which may further contain at least one heteroatom selected from oxygen, nitrogen, and sulfur; and x is an integer of from about 2 to about 9.

5. An epoxy resin composition comprising an epoxy resin and at least one epoxy resin curing agent which comprises the reaction product of at least one carboxylic acid anhydride selected from mono-, di-, and poly-anhydrides with at least one polyamine of the formula:

$$H_2N—R—(NH_2)_x$$

in an amount of at least about 2 moles of polyamine per mole of carboxylic acid anhydride group; wherein R is selected from an aromatic group containing from about 13 to about 34 carbon atoms; a cycloalkyl group containing from about 13 to about 34 carbon atoms; and an alkyl group containing from about 9 to about 25 carbon atoms, which may further contain at least one heteroatom selected from oxygen, nitrogen, and sulfur; and x is an integer of from about 2 to about 9.

4,332,929

COPOLYMERS OF ETHERIMIDES AND AMIDES

Fred F. Holub, Schenectady, N.Y., and Gary A. Mellinger, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 116,894, Jan. 30, 1980, abandoned. This application Mar. 16, 1981, Ser. No. 244,465

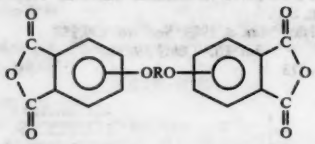
Int. Cl.³ C08G *73/14*

U.S. Cl. 528—185 **28 Claims**

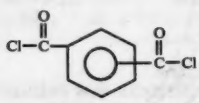
1. A method for making copolymers of etherimide units and amide units which comprises simultaneously interacting a mixture of ingredients comprising (I) an organic diamine of the formula

$$H_2NR^1NH_2$$

(II) An aromatic bis (etheranhydride) of the general formula:



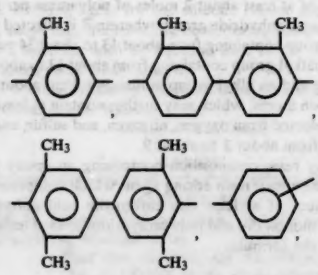
and (III) a phthaloyl halide of the formula:



where the

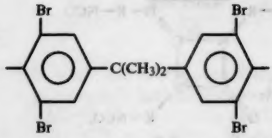
groups

the meta or para to each other, R is a member selected from the class consisting of (a) the following divalent organic radicals:

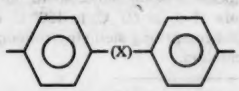


and

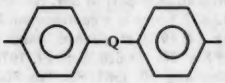
-continued



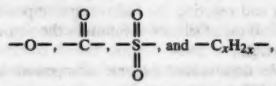
and (b) divalent organic radicals of the general formula,



where X is $-C_yH_{2y}-$, y is a whole number equal to from 1 to 5 inclusive, and R^1 is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, (c) $C_{(2-8)}$ alkylene terminated polydiorganosiloxanes, and (d) divalent radicals included by the formula,



where Q is a member selected from the class consisting of



and x is a whole number equal to from 1 to 5, inclusive.

4,332,930

PROCESS FOR POLYMERIZING FORMALDEHYDE

Takami Ishii; Naohisa Takikawa; Kiyoaki Tokunaga, and Nobuhiro Ogawa, all of Ube, Japan, assignors to UBE Industries, Ltd., Japan

Filed Aug. 22, 1980, Ser. No. 180,306

Claims priority, application Japan, Aug. 23, 1979, 54-106639; Jul. 15, 1980, 55-95693

Int. Cl.³ C08G *4/00*

U.S. Cl. 528—233 **22 Claims**

1. A process for polymerizing formaldehyde which comprises subjecting formaldehyde to slurry polymerization in an inert organic liquid medium in the presence of a polymerization catalyst and at least one polyvalent metal salt selected from the group consisting of polyvalent metal salts of alkylsalicylic acids and polyvalent metal salts of dialkyl esters of sulfosuccinic acid.

4,332,931

PROCESS FOR PRODUCING UNSATURATED POLYESTER

Takashi Hasegawa, Kawanishi; Minoru Miki, Kobe, and Yutaka Taniguchi, Amagasaki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 9, 1981, Ser. No. 252,602

Claims priority, application Japan, Apr. 22, 1980, 55-53927

Int. Cl.³ C08G *63/42*

U.S. Cl. 528—297 **11 Claims**

1. A process for producing an unsaturated polyester, which comprises reacting dicarboxylic acid anhydride with alkylene

oxide in the presence of a reaction product of dicarboxylic acid and dicyclopentadiene.

4,332,932

METHOD FOR PRODUCING A RUBBER MELT IN A TEMPERATURE-CONTROLLED SCREW EXTRUDER

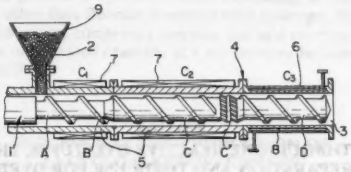
Kunihiro Harada, Machida; Kiyoshi Kasai, Yokohama; Yoshiki Maki, and Norimasa Oda, both of Hiroshima, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd. and The Japan Steel Works, Ltd., both of Tokyo, Japan

Filed Jan. 15, 1980, Ser. No. 112,291

Claims priority, application Japan, Jan. 16, 1979, 54-3635

Int. Cl.³ C08C *4/00*

U.S. Cl. 528—481 **11 Claims**



1. A method for producing a rubber melt, comprising:

feeding solid rubber into a screw extruder,

decomposing said solid rubber in a decomposing section of said screw extruder at a temperature of 400°–500° C. to produce a rubber melt, and

cooling said rubber melt to a temperature of not more than 250° C. in a discharging section of said screw extruder.

4,332,933

PROCESS FOR TREATING OLEFINIC POLYMERS WITH STEAM

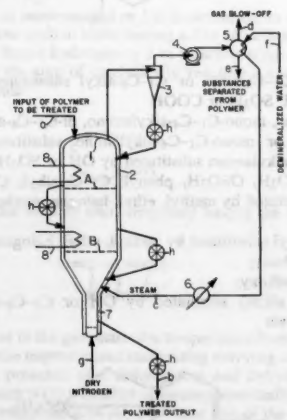
Giovanni Di Drusco, Milan; Roberto Rinaldi, Mantova, and Gabriele Govoni, Renazzo, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jul. 1, 1980, Ser. No. 165,017

Claims priority, application Italy, Jul. 2, 1979, 24033 A/79

Int. Cl.³ C08F *6/00*

U.S. Cl. 528—500 **5 Claims**



1. A process for reducing the content of catalyst residues, halogenated compounds and organic substances, contained in the crystalline olefinic homopolymers and copolymers prepared by (co)polymerization of olefins with catalysts obtained by reacting an organometallic Al compound with a Ti compound, in which the Ti compound is supported on a Mg halide, and an electron-donor compound is combined with the Ti compound and/or the Mg compound said process consisting in causing a stream of superheated steam having a temperature of from 105° to 140° C. and a pressure of from 0.1 to 10 kg/cm² gauge, to pass over the polymer in powder form in a ratio by weight between steam and polymer ranging from 0.10 to 1, and maintaining the polymer at such a temperature so as to prevent steam condensation.

4,332,934

13-(1-OXYL-2,2,6,6-TETRAMETHYLPIPERYLIDENYL-4)HYDRAZONE RUBOMYCIN HYDROCHLORIDE WITH A PARAMAGNETIC CENTER AND A METHOD OF PRODUCING SAME

Nikolai M. Emanuel, Vorobievskoe shosse, 2B, kv. 44, Moscow; Nina P. Konovalova, Noginsky raion, p/o Chernogolovka, ulitsa Tretya, 3, kv. 1, Moskovskaya oblast; Leonard S. Povarov, ulitsa Krasikova, 19, kv. 28, Moscow; Anatoly B. Shapiro, B. Koptevsky proezd, 4, kv. 37, Moscow; Raisa F. Dyachkovskaya, Vorobievskoe shosse, 2b, kv. 9, Moscow; Valentina I. Suskina, ulitsa Ulyanova, 49, korpus 1, kv. 58, Moscow, and Ljudmila K. Denisova, Noginsky raion, p/o Chernogolovka, Shkolny bulvar, 1b, kv. 100, Moskovskaya oblast, all of U.S.S.R.

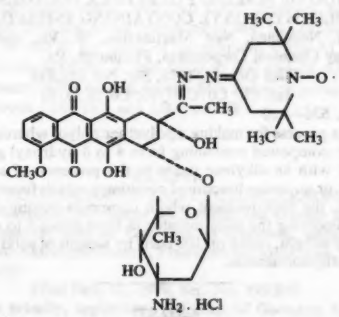
Filed Oct. 2, 1980, Ser. No. 192,964

Claims priority, application U.S.S.R., Mar. 24, 1980, 2893526

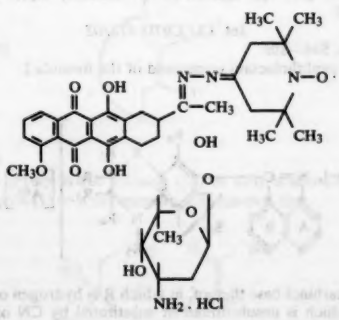
Int. Cl.³ C07H *15/24*

U.S. Cl. 536—6.4 **2 Claims**

1. 13-(1-Oxyl-2,2,6,6-tetramethylpiperylidenyl-4)hydrazone rubomycin hydrochloride with a paramagnetic centre, of the formula



2. A method of producing 13-(1-oxo-2,2,6,6-tetramethylpiperylidenyl-4)hydrazone rubomycin hydrochloride with a paramagnetic centre, of the formula



comprising treating rubomycin hydrochloride with an alkali to form the rubomycin base, reacting said rubomycin base with 1-oxo-2,2,6,6-tetramethyl-piperidone-4-hydrazone in a respective molar ratio of 1:1:5 to 2 in a chloroform-methanol medium with a respective volumetric ratio of 8:1 in the presence of acetic acid in a fourfold molar excess with respect to said rubomycin base at 20° to 25° C., separating the formed precipitate, treating the solution remaining after separation and containing the reaction product with an alcoholic solution of hydrogen chloride in a twofold molar excess with respect to said rubomycin base and precipitating the end product with diethyl ether.

4,332,935

PROCESS FOR THE PRODUCTION OF CATIONIC STARCH ETHERS

Wolfgang Fischer, Kahl; Manfred Langer, Karlstein, and Gerhard Pohl, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,284

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949886

Int. Cl.³ C08B *31/08, 31/12*

U.S. Cl. 536—50 20 Claims

1. A process for the production of a cationic starch ether comprising reacting starch with an alkylidene epoxide having a tertiary amino group or a quaternary ammonium group in aqueous alkaline medium at a temperature of 50° to 120° C. and wherein the medium contains about 10 to 35 weight percent of water and about 0.2 to 2.0 weight percent calcium hydroxide or calcium oxide.

4,332,936

METHOD OF MAKING POLYETHER POLYOLS FROM SOLID HYDROXYL CONTAINING INITIATORS

Neil H. Nodelman, New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Oct. 16, 1978, Ser. No. 952,019

Int. Cl.³ C07C *41/00;* C07H *15/04*

U.S. Cl. 536—120 1 Claim

1. In a process for making a polyether polyol wherein a solid initiator compound containing from 4 to 8 hydroxyl groups is reacted with an alkylene oxide in the presence of an amine catalyst or an amine functional coinitiator which functions as a catalyst, the improvement which comprises mixing and partially dissolving the solid initiator in from about 5 to about 70 parts by weight, based on 100 parts by weight of solid initiator of dimethylformamide.

4,332,937

NAPHTHOLACTAM COMPOUNDS

Rudolf Zink, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

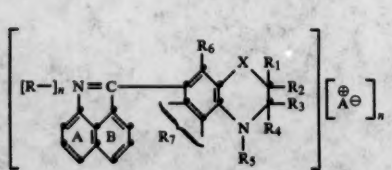
Filed Mar. 24, 1980, Ser. No. 133,161

Claims priority, application Switzerland, Apr. 4, 1979, 3133/79

Int. Cl.³ C07D *413/02*

U.S. Cl. 544—105 15 Claims

1. A naphtholactam compound of the formula I



(I)

or the carbinol base thereof, in which R is hydrogen or C_1–C_4 alkyl which is unsubstituted or substituted by CN or C_1–C_4 alkoxy; X is a —O— atom; R_1, R_2 and R_3 are hydrogen; R_4 is hydrogen, C_1–C_6 alkyl which is unsubstituted or substituted by OH, CN or phenyl, or is phenyl; R_5 is a C_1–C_4 alkyl group which is unsubstituted or substituted by OH, CN, C_1–C_4 alkoxy or phenyl, or is C_2–C_4 alkenyl; R_6 and R_7, each independently of the other, is hydrogen, C_1–C_4 alkyl or halogen; A is an anion; n is 0 or 1; and rings A and B are unsubstituted or substituted by halogen, CN, COOY, $CONH_2$, CONHY, CON(Y)$_2$, SO_2NH_2, SO_2NHY, $SO_2N(Y)_2$ or SO_2Y in which Y is C_1–C_4 alkyl.

4,332,938

ANTHAQUINONE REACTIVE DYESTUFFS, THEIR PREPARATION AND THEIR USE FOR DYEING MATERIALS CONTAINING OH GROUPS OR AMIDE GROUPS

Wolfgang Harms; Klaus Wunderlich, both of Leverkusen, and Klaus von Oertzen, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

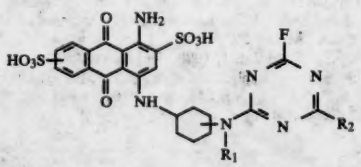
Filed Nov. 30, 1979, Ser. No. 99,120

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854483

Int. Cl.³ C07D *251/00*

U.S. Cl. 544—189 7 Claims

1. Dyestuffs of the formula



wherein

R_1=H, C_1–C_4-alkyl or C_1–C_4-alkyl substituted by OH, OSO_3H, SO_3H or COOH

R_2=amino, mono-C_1–C_4-alkylamino, di-C_1–C_4-alkylamino; amino or mono-C_1–C_4-alkylamino substituted by di-C_1–C_4-alkylamino substituted by OH or SO_3H;

OH, SO_3H, OSO_3H, phenyl; C_1–C_4-alkyl, C_1–C_4-alkyl substituted by methyl, ethyl, halogen, methoxy or ethoxy;

aryl; aryl substituted by methyl, ethyl, halogen, methoxy or ethoxy;

C_1–C_6-alkoxy;

C_1–C_6 alkoxy substiuted by OH or C_1–C_6-alkoxy; or wherein

wherein

R_3=H; C_1–C_4-alkyl or C_1–C_4-alkyl substituted by OH, SO_3H, OSO_3H.

4,332,939

PROCESS FOR THE PREPARATION OF FLUORINATED S-TRIAZINES

Gottfried Seifert, Muttenz, and Sebastian Stäubli, Magden, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 81,965, Oct. 4, 1979, abandoned, which is a continuation of Ser. No. 891,377, Mar. 29, 1978, abandoned.
This application Mar. 24, 1981, Ser. No. 246,968
Claims priority, application Switzerland, Apr. 6, 1977, 4359/77; Apr. 15, 1977, 4703/77
Int. Cl.³ C07D *251/28*
U.S. Cl. 544—217 13 Claims

1. In a process for the preparation of a fluorinated s-triazine, in which process a cyanuric halide containing at least one halogen other than fluoride is reacted with hydrogen fluoride, the improvement comprising carrying out said reaction in the presence of activated charcoal at a temperature between 180° C. and 220° C.

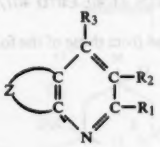
4,332,940

PROCESS FOR THE PRODUCTION OF 2,3-CYCLOALKENOPYRIDINES

Helmut Beschke; Heinz Friedrich, and Heribert Offermanns, all of Hanau, Fed. Rep. of Germany, assignors to Deutsche Gold -und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Sep. 6, 1977, Ser. No. 830,983
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2639702
Int. Cl.³ C07D *215/04, 221/04*
U.S. Cl. 546—181 23 Claims

1. In a process for the production of a 2,3-cycloalkenopyridine of the formula

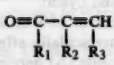


III

where Z is an unsubstituted or 1 to 6 carbon atoms alkyl substituted aliphatic carbon chain having a 2 to 16 carbon atoms and R_1, R_2 and R_3 are hydrogen or 1 to 6 carbon atom alkyl group comprising the step of catalytically reacting a cycloalkanone of the formula

I

or isophorone with an oxo compound having the formula



II

and ammonia in the gas phase at a temperature from about 250° to 550° C., the improvement comprising carrying out the reaction in the presence of a dehydrating and dehydrogenating catalyst which is (1) a catalyst consisting essentially of oxygen containing compounds of Al, F at least one of the elements B and Si and at least one element from the second and fourth groups of the periodic system selected from the group consisting of Mg, Ba, Zn, Sn and Zr, said catalyst having been prepared by heating in the presence of oxygen at a temperature of 600° to 800° C.;

1. aluminum, aluminum oxide or an aluminum compound convertible to the oxide at a said temperature,
2. a compound of fluorine, said fluorine having been added as ammonium fluoride, ammonium hydrogen fluoride, hydrogen fluoride, fluoboric acid, fluosilicic acid, boron trifluoride, magnesium fluoborate, magnesium fluosilicate, zinc fluosilicate or barium fluosilicate,
3. boron, silicon, boric oxide, silica or a compound of boron or silica convertible to the oxide at said temperature and
4. magnesium, zinc, tin, zirconium, magnesium oxide, zinc oxide, tin oxide or a compound of zirconium or barium convertible to the oxide at said temperature, the atomic ratio of Al to F being from 1000:25 of 1000:800 and the atomic ratio of Al to the total of (3) and (4) being from 1000:5 to 1000:200, the atomic ratio of the total of boron and silicon to the other element from the second and fourth groups being between 1 to 10 and 10 to 1 or (2) a catalyst having been prepared by heating at 600° to 800° C. in the presence of gaseous oxygen (1) aluminum metal, aluminum oxide, or a compound of aluminum convertible to the oxide upon heating with gaseous oxygen at 600° to 800° C., (2) ammonium fluoride, hydrogen fluoride or a fluoride of an element of the second main group of the periodic system and (3) at least one element of the second main group of the periodic system, the oxide of said element or a compound of said element convertible to the oxide in the presence of gaseous oxygen at a temperature of 600° to 800° C., said catalyst consisting essentially of the elements Al, F, O and the element of the second main group of the periodic system or (3) a catalyst consisting essentially of the product obtained by treating with oxygen at a temperature of 550° to 1200° C. compounds of the elements Al, F and O and at least two other elements selected from the second, fourth, fifth and sixth groups of the periodic system, said two other elements being selected from the group consisting of Mg, Ba, Zr, Sn, Ti, P, Ta, Sb and S, the ratios of the elements being Al to F of between 1,000 to 10 and 1,000 to 800 and of Al to the elements of the second, fourth, fifth and sixth groups being between 1,000 to 5 and 1,000 to 200.

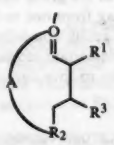
4,332,941

CYCLOHEXANONES AND CYCLOHEXENONES

Rüdiger Berthold, Bad Soden am Taunus, and Werner H. Müller, Eppstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 195,840
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941625
Int. Cl.³ C07D *401/12*
U.S. Cl. 546—191 10 Claims

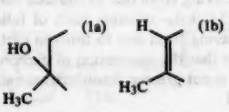
1. A compound of the formula



(1)

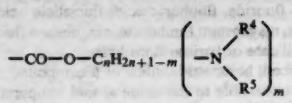
in which

A is a group of the formula (1a) or (1b) which complete formula (1) to a carbocyclic 6-membered ring,



(1a) (1b)

R^1 is hydrogen or a group of the formula (1c)



R^2 is a group of the formula (1c),

R^3 is hydrogen, alkyl of 1 to 10 carbon atoms, phenyl, phenyl substituted by 1 to 3 equal or different substituents selected from the group consisting of lower alkyl, lower alkoxy, trifluoromethyl, nitro, cyano, chloro, carbamoyl, sulfamoyl or mono- or di-(lower alkyl)-carbamoyl or -sulfamoyl,

R^4 and R^5, which are the same or different, are lower alkyl or $—NR^4R^5$ is pyrrolidinyl, piperidyl or morpholyl,

m is 1 or 2 and

n is 2 to 6.

5. A compound as claimed in claim 1, wherein R^4 and R^5 are methyl or ethyl or $—NR^4R^5$ is piperidyl, m is 1 and n is 2 or 3.

4,332,942

3-(2-HYDROXY-4-(SUBSTITUTED)PHENYL)AZACYCLOALKANES AS ANALGESICS

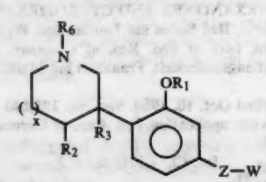
Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer, Inc., New York, N.Y.

Division of Ser. No. 419, Jan. 2, 1979, Pat. No. 4,263,438, which is a division of Ser. No. 832,869, Sep. 13, 1977, Pat. No. 4,147,872. This application Oct. 20, 1980, Ser. No. 198,742

Int. Cl.³ C07D *211/22, 211/34*

U.S. Cl. 546—240 **7 Claims**

1. A compound having the formula



wherein R_1 is selected from the group consisting of hydrogen, benzyl and alkanoyl having from one to five carbon atoms;

R_2 is selected from the group consisting of hydrogen, alkyl having from one to six carbon atoms, phenyl and phenylalkyl having from one to four carbon atoms in the alkyl group;

R_3 is hydrogen;

R_6 is selected from the group consisting of alkenyl having from two to six carbon atoms and alkynyl having from two to six carbon atoms;

x is 0 or an integer from 1 to 3;

z is selected from the group consisting of

(a) alkylene having from one to thirteen carbon atoms;

(b) $-(alk_1)_m-O-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) is alkylene having from one to thirteen carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than thirteen; each of m and n is 0 or 1; and

W is hydrogen; or a pharmaceutically acceptable acid addition salt thereof.

4,332,943

PROCESS FOR THE PREPARATION OF PYRIDINE

Richard Bicker, Frankfurt am Main, and Rüdiger Erckel, Eppstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 14, 1981, Ser. No. 292,805

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3031014

Int. Cl.³ C07D *213/06, 213/12*

U.S. Cl. 546—253 **4 Claims**

1. Process for the preparation of pyridine by ammoxidation at elevated temperature of a C_5 hydrocarbon using a catalyst based on SiO_2 and/or Al_2O_3 with a large surface area and a large pore volume, wherein

(a) cyclopentadiene is used as the C_5 hydrocarbon, and

(b) silica gel, γ-Al_2O_3 and/or aluminum silicate(s) in tellurium-free form, if appropriate doped with oxides of transition metals and/or of gallium and/or indium, having a surface area of between about 75 and 800 m^2/g and a pore volume of between about 0.2 and 2 cm^3/g are used as the catalyst based on SiO_2 and/or Al_2O_3 and

(c) the ammoxidation is carried out at temperatures of from about 200° to 400° C., preferably from about 250° to 350° C.

4,332,944

COMPOSITIONS AND USE

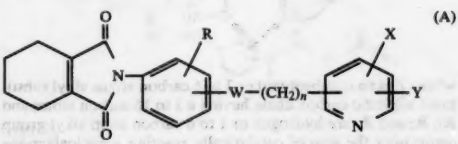
Richard J. Anderson, Palo Alto, and Michael M. Leippe, Boulder Creek, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Jul. 9, 1981, Ser. No. 281,808

Int. Cl.³ A01N *43/40*; C07D *401/12*

U.S. Cl. 546—272 **20 Claims**

1. A compound selected from those of the following formula (A):



wherein,

n is one, two or three;

R is hydrogen, bromo, chloro, fluoro or iodo;

W is oxygen or sulfur; and

each of X and Y is, independently, selected from hydrogen, bromo, chloro, fluoro, iodo, lower alkyl, lower alkoxy, lower thioalkyl, lower haloalkyl, lower haloalkoxy, nitro, lower alkoxycarbonyl and cyano.

20. A method for the control of weeds which comprises treating said weed with a herbicidally effective amount of a compound according to formula (A) herein.

4,332,945

OPTICALLY ACTIVE NICOTINE ANALOGS AND PROCESS FOR THEIR PREPARATION

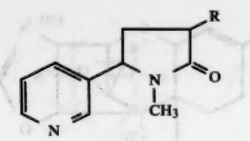
William B. Edwards, III, Richmond, Va., assignor to Philip Morris, Incorporated, New York, N.Y.

Filed Jan. 29, 1981, Ser. No. 229,481

Int. Cl.³ C07D *401/04*

U.S. Cl. 546—281 **24 Claims**

1. A process for preparing a compound represented by the formula:



wherein R is selected from the group consisting of $—CO_2R'$ and R' wherein R' is a straight chain or branched alkyl group containing from 1 to 12 carbon atoms which comprises treating continine at a temperature within the range from about −120° to 180° with a non-nucleophilic base and condensing the resulting carbanion with about 1 equivalent of a condensing reagent selected from the group consisting of R'_2CO_3 and R' halide and recovering the resulting 3-substituted 1-methyl-5-(3-pyridyl)-2-pyrrolidinone.

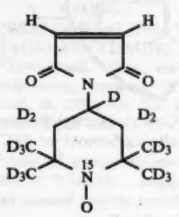
4,332,946

RESOLUTION ENHANCING MALEIMIDE SPIN LABEL FOR BIOLOGICAL EPR STUDIES

Sindhaghatta D. Venkataramu; Donald E. Pearson, and Albert H. Beth, all of Nashville, Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Filed Apr. 3, 1981, Ser. No. 250,137
Int. Cl.³ C07D *401/04*
U.S. Cl. 546—208 **1 Claim**

1. As a resolution enhancing spin label for biomedical EPR applications, the compound



N-(^{15}N-oxyl-2,2,6,6-tetramethyl-4-piperidinyl-d_{17})maleimide.

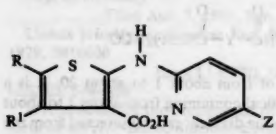
4,332,947

CERTAIN 2-PYRIDYLAMINO-3-THIOPHENE CARBOXYLIC ACID DERIVATIVES

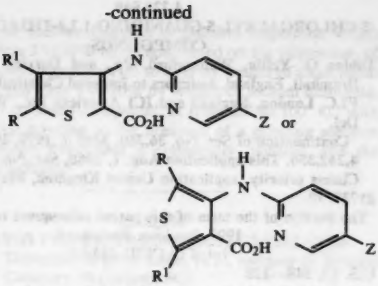
Francis J. Tinney; David T. Connor; Wlaczeslaw A. Cetenko; Joseph J. Kerbleski, and Roderick J. Sorenson, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 132,603, Mar. 21, 1980, Pat. No. 4,287,340, which is a division of Ser. No. 70,227, Aug. 27, 1979, Pat. No. 4,230,707. This application Jan. 30, 1981, Ser. No. 230,167
Int. Cl.³ C07D *409/02, 409/14*
U.S. Cl. 546—284 **2 Claims**

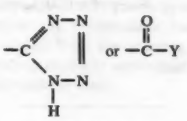
1. A compound of the formulae



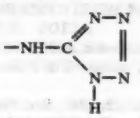
-continued



and salts thereof, where [R, R^1 and Z are as defined in claim 1] in R and R^1 are hydrogen, lower alkyl, chloro, bromo, phenyl or x-substituted phenyl where x is lower alkyl, chloro, fluoro, or lower alkyl —O— and Z is —CN,



wherein Y is —OH, $—NH_2$, —O— lower alkyl or



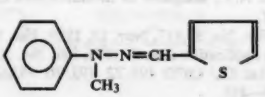
4,332,948

NOVEL HYDRAZONE COMPOUNDS AND PROCESS FOR PREPARING THE SAME

Kiyoshi Sakai; Mitsuru Hashimoto, and Kyoji Tsutsui, all of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,752
Claims priority, application Japan, May 25, 1979, 54-64033
Int. Cl.³ C07D *333/36;* C07C *109/12*
U.S. Cl. 542—417 **4 Claims**

1. A hydrazone compound having the formula



4,332,949

3-CHLOROALKYL-5-GUANIDINO-1,2,4-THIADIAZOLE COMPOUNDS

Tobias O. Yellin, Wallingford, Pa., and Derrick M. Mant, Bramhall, England, assignors to Imperial Chemical Industries PLC, London, England and ICI Americas Inc., Wilmington, Del.

Continuation of Ser. No. 36,360, May 7, 1979, Pat. No. 4,242,350. This application Aug. 1, 1980, Ser. No. 174,494

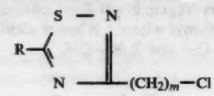
Claims priority, application United Kingdom, May 24, 1978, 21737/78

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.³ C07D *285/08*

U.S. Cl. 548—128 **2 Claims**

1. A thiadiazole derivative of the following formula:



wherein

R is guanidino; and

m is 1 to 4.

4,332,950

THIAZOLIDINE-SUBSTITUTED PHENYL SULFONIC ACIDS

Charles A. Kelly, Dorchester, and Frank A. Meneghini, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

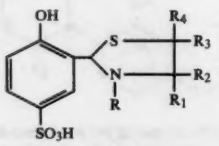
Filed Mar. 2, 1981, Ser. No. 239,356

Int. Cl.³ C07D *277/04*

U.S. Cl. 548—146 **16 Claims**

1. A method which comprises reacting the hydrochloride salt of a 3-(thiazolidin-2'-yl)-4-hydroxy-phenyl sulfonic acid with an excess over equimolar amounts of (i) neat thionyl chloride or (ii) thionyl chloride in a chlorinated hydrocarbon to yield the corresponding 3-(thiazolidin-2'-yl)-4-hydroxy-phenyl sulfonyl chloride.

13. A compound of the formula



wherein R is alkyl, phenyl-substituted alkyl or phenyl and R_1, R_2, R_3 and R_4 each are selected from hydrogen, phenyl and alkyl.

4,332,951

ANTITUMOR AGENTS

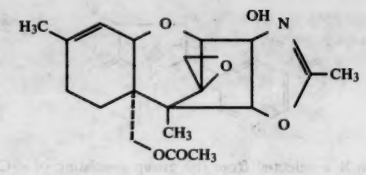
Takushi Kaneko, Fayetteville; John M. Essery, Pleasantville; Henry Schmitz, Syracuse, and Terrence W. Doyle, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 95,917, Nov. 19, 1979, Pat. No. 4,267,113. This application Jan. 9, 1981, Ser. No. 223,594

Int. Cl.³ C07D *498/22, 493/10, 493/20*

U.S. Cl. 548—218 **1 Claim**

1. The compound having the formula



4,332,952

HYPOGLYCEMIC 5-SUBSTITUTED OXAZOLIDINE-2,4-DIONES

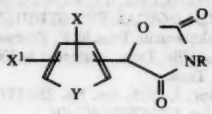
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 173,206, Jul. 28, 1980, abandoned. This application Apr. 23, 1981, Ser. No. 252,961

Int. Cl.³ C07D *493/00, 495/00, 263/30*

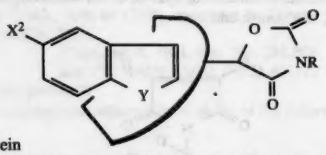
U.S. Cl. 548—226 **23 Claims**

1. A compound of the formula



(I)

or



(II)

wherein

R is hydrogen, $(C_1–C_4)$-alkanoyl, benzoyl, $(C_2–C_4)$-carbalkoxy, $(C_1–C_3)$-alkylcarbamoyl or di$(C_1–C_3)$-alkylcarbamoyl;

Y is sulfur or oxygen;

X is hydrogen, fluoro, chloro, bromo, iodo, methyl, phenyl, benzoyl, or $(C_1–C_3)$-alkoxy;

X^1 is hydrogen or methyl; and

X^2 is hydrogen, fluoro, bromo, chloro or iodo; or a pharmaceutically acceptable cationic salt thereof when R is hydrogen.

4,332,953

CARBAMYLBIURET-MODIFIED POLYISOCYANATES

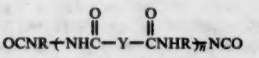
Donald L. Christman, Grosse Ile, and Peter T. Kan, Plymouth, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 92,479, Nov. 8, 1979, Pat. No. 4,271,087. This application Dec. 29, 1980, Ser. No. 220,578

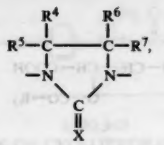
Int. Cl.³ C07D *233/96, 233/72, 233/84, 233/86*

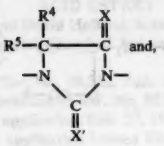
U.S. Cl. 548—307 **7 Claims**

1. A carbamylbiuret-modified polyisocyanate of the formula:

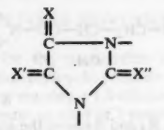


wherein n is an integer of from about 1 to about 20; R is a divalent hydrocarbon radical containing from about 1 to about 18 carbon atoms; and Y is the divalent radical selected from the group consisting of


(a)


(b)

and,


(c)

wherein X, X', and X'' are independently selected from the group consisting of oxygen and sulfur; R^4, R^5, R^6, and R^7 are independently selected from the group consisting of hydrogen, alkyl containing from about 1 to about 6 carbon atoms, cycloalkyl containing from about 3 to about 7 carbon atoms, phenyl, and benzyl.

4,332,954

CYCLIC SULFOPERFLUOROALIPHATICCARBOXYLIC ACID ANHYDRIDES

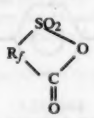
Robert J. Koshar, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 30, 1981, Ser. No. 229,872

Int. Cl.³ C07D *327/02, 327/04, 327/06*

U.S. Cl. 549—10 **6 Claims**

1. Cyclic anhydrides of omega-sulfoperfluoroaliphaticcarboxylic acids, having the formula:



wherein R_f is perfluoroalkylene having 2 to 5 catenary carbon atoms or perfluorocycloalkylene having 4 to 7 ring atoms, R_f optionally being substituted by one or more straight chain, branched, or cyclic perfluoroalkyl groups of 1 to 12 carbon atoms, with R_f having a total of up to 14 carbon atoms.

4,332,955

PREPARATION OF TRANSPARENT PIGMENTARY FORMS OF 4,4',7,7'-TETRACHLOROTHIOINDIGO

Helmut Hoch, Wachenheim; Erwin Hahn, Heidelberg, and Heinrich Hiller, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 137,955

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916400

Int. Cl.³ C07D *333/64*

U.S. Cl. 549—56 **16 Claims**

1. A process for the preparation of a transparent pigmentary form of 4,4',7,7'-tetrachlorothioindigo wherein the leuco compound of tetrachlorothioindigo is oxidized with air, hydrogen peroxide or an adduct of hydrogen peroxide with sodium carbonate or sodium borate in an aqueous suspension which contains from 3 to 20% by weight, based on the suspension, of leuco compound and from 0.5 to 50% by weight of alkali metal hydroxide and from 1 to 10% by weight of sodium dithionite, both based on leuco compound, at from 20° to 100° C., with simultaneous grinding in the presence of a grinding medium until the leuco compound is completely oxidized, and the pigment is isolated.

4,332,956

PROCESS FOR PREPARING ACYLOXYSILANES

Luisito A. Tolentino, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jun. 26, 1981, Ser. No. 278,541

Int. Cl.³ C07F *7/08, 7/04*

U.S. Cl. 556—442 **29 Claims**

1. In a process for producing acyloxysilanes by reacting a chlorosilane with an aliphatic carboxylic acid in a column at an elevated temperature wherein the chlorosilane is fed into the column, aliphatic carboxylic acid passes upward in the column from a source below the chlorosilane feed, and hydrogen chloride gas is removed from the column, the improvement comprising introducing aliphatic carboxylic acid into the column above the chlorosilane feed.

4,332,957

PHENOXYALKOXY SILANES

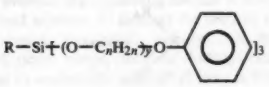
Harry Braus; Anthony Barlow, and Melvin F. Maringer, all of Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,012

Int. Cl.³ C07F *7/04, 7/18*

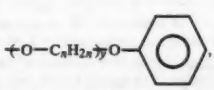
U.S. Cl. 556—446 **14 Claims**

1. A composition of matter comprising a compound corresponding to the formula



wherein

R is C_1–C_5 alkyl, C_2–C_4 alkenyl or



y is an integer of 1 to 5 and n is an integer of 1 to 4.

4,332,958

BENZYLIDENE GLYCINE ESTER DERIVATIVES

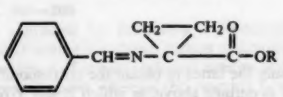
Shy-fuh Lee, Sunnyvale, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 178,062, Aug. 14, 1980, Pat. No. 4,298,760. This application Jun. 19, 1981, Ser. No. 275,180

Int. Cl.³ C07C *101/06*

U.S. Cl. 560—35 **4 Claims**

1. A compound of the following formula


(2)

wherein R is lower alkyl, unsubstituted aryl, or aryl substituted at one, two or three of the ring carbon atoms with a group

selected from lower alkyl, lower haloalkyl, halogen, nitro, cyano or hydroxy.

4,332,959

PROCESS FOR MANUFACTURING PHENOXYLACTIC ACIDS, THEIR DERIVATIVES AND PRODUCTS OBTAINED THEREBY

Jesus Anatol; Yves Clenet, both of Paris, and Georges Bourdiau, Le Bourget, all of France, assignors to Sucreries du Soissonnais et Compagnie Sucriere, France

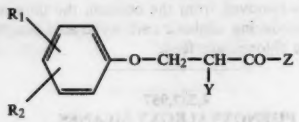
Filed Aug. 17, 1979, Ser. No. 67,637

Claims priority, application France, Aug. 18, 1978, 78 24116

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—60 **5 Claims**

1. Process for the manufacture of phenoxylactic acids and their derivatives of the general formula:

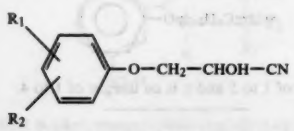


(A1)

(in which R_1 and R_2, identical or different, can represent hydrogen atoms, methyl residues, methoxy groups or halogens; Y represents an OH or O—CO-R_3 group with R_3 representing either an aliphatic residue optionally substituted with a halogen, or an aromatic residue optionally substituted on the nucleus with one or several methyl, methoxy, halogen groups or a pyridyl group; Z represents OH group or an

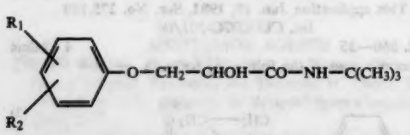
group

with R_4 representing an alkyl or aryl radical and R_5 hydrogen or an alkyl radical, or NR_4R_5 represents the morpholinyl radical), which process consists of subjecting a cyanhydrin of the formula:



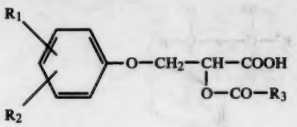
(A)

(where R_1 and R_2 have the above-mentioned significance) to a reaction with tert. butanol or isobutene in the presence of an acid to obtain the compound of the formula:

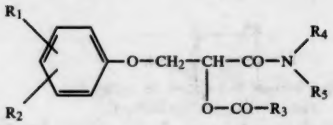


(A3a)

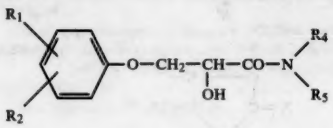
and of hydrolysing the latter to obtain the corresponding acid of formula (A_1) as defined above, in which Z and Y represent —OH, then, optionally, subjecting this acid to conventional reactions for preparing ester-acids, ester-amides or corresponding amides respectively of the formula:



(A2)



(A4)



(A3)

(where R_1 and R_2, R_3, R_4 and R_5 have the above significance).

4,332,960

HERBICIDAL COMPOSITIONS

Jurgen Trosken, Walldorf; Gerhard Horlein, Frankfurt am Main; Ernst-Friedrich Schulze, Hofheim, and Peter Langeluddeke, Diedenbergen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

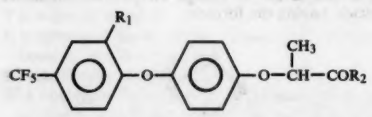
Filed Jul. 8, 1975, Ser. No. 594,031

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1974, 2433067

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—62 **10 Claims**

1. Compounds of the formula I



I

in which

R_1 is hydrogen or halogen, and

R_2 is hydroxy, (C_1–C_6)alkoxy, cyclohexyloxy, phenyloxy, or

the group -Ocat werein cat stands for the cation of an inorganic or organic base.

4,332,961

HERBICIDAL COMPOUND, HERBICIDAL COMPOSITION CONTAINING THE SAME, AND METHOD OF USE THEREOF

Ryohei Takahashi, Kusatsu; Kanichi Fujikawa, Kyoto; Isao Yokomichi, Kusatsu; Sinzo Someya, Kusatsu, and Nobuyuki Sakashita, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

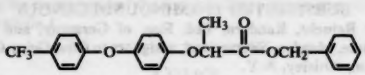
Division of Ser. No. 596,784, Jul. 17, 1975. This application Apr. 15, 1977, Ser. No. 788,048

Claims priority, application Japan, Jul. 17, 1974, 49-82403; Jul. 17, 1974, 49-82404; Oct. 14, 1974, 49-117047

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—62 **4 Claims**

1. A compound having the formula:



4,332,962
PREPARATION OF CYCLOPROPANE CARBOXYLIC ACID ESTERS

David J. Milner, and David Holland, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 49,322, Jun. 18, 1979, abandoned, which is a continuation of Ser. No. 883,310, Mar. 3, 1978, abandoned. This application Feb. 27, 1981, Ser. No. 238,950
Claims priority, application United Kingdom, Mar. 11, 1977, 10401/77
Int. Cl.³ C07D *307/45;* C07C *69/743*
U.S. Cl. 560—124 6 Claims

1. A process for the preparation of an ester of 3(2,2-dihalovinyl)-2,2-dimethylcyclo-propane carboxylic acid, said process comprising reacting a 1,1-dihalo-4-methyl-1,3-pentadiene with an alkyl ester or ester of 3-phenoxyl benzyl alcohol or 5-benzyl-3-furyl methanol of diazoacetic acid in the presence of a divalent rhodium salt which is a pivalate, octoate, benzoate, triphenyl acetate, acetylmandelate, p-methoxybenzoate, p-chlorobenzoate, acetate, n-methoxybenzoate, α-D-methyl camphorate or borofluoride, as a catalyst.

4,332,963
SELECTIVE PRODUCTION OF PHENYLENE DIACETATE

James E. Lyons, Wallingford, and Chao-Yang Hsu, Media, both of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 137,707, Apr. 7, 1980, abandoned. This application May 11, 1981, Ser. No. 262,157
Int. Cl.³ C07C *69/035*
U.S. Cl. 560—131 10 Claims

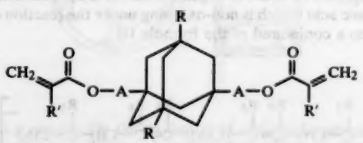
1. A process for the acetoxylation of phenyl acetate, which comprises reacting, at elevated temperature and pressure and in the presence of a palladium catalyst and a gas mixture comprising an inert gas and oxygen, a reaction mixture comprising phenyl acetate, acetic acid and acetic anhydride, the amount of oxygen in the gas mixture not exceeding 13 vol. %, whereby paraphenylene diacetate is produced as the predominant product.

4,332,964
UNSATURATED ESTERS OF ADAMANTANE CONTAINING DIOLS AND THERMO-RESISTANT CROSS-LINKED POLYMERS THEREFROM

Gunter Bellmann, Onex, Switzerland, and Nguyen Van Tao, Cruseilles, France, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 158,504, Jun. 11, 1980. This application May 18, 1981, Ser. No. 264,680
Int. Cl.³ C07C *69/54*
U.S. Cl. 560—141 8 Claims

1. A compound having the formula



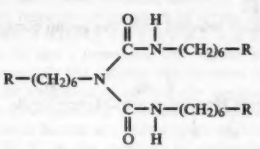
wherein R is a radical selected from the group consisting of hydrogen or methyl; R′ is a radical selected from the group consisting of hydrogen or methyl; and A is either a sigma (σ) bond; or a radical satisfying the formula $(CH_2)\eta$ where η is an integer of from 1 through 4; or phenylene; or an alkyl derivative of phenylene.

4,332,965
BLOCKED POLYISOCYANATES FORMED FROM A POLYISOCYANATE CONTAINING BIURET GROUPS AND FROM AN ACETOACETIC ACID ALKYL ESTER

Horst Dalibor, Norderstedt, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

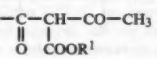
Continuation of Ser. No. 779,156, Mar. 18, 1977, abandoned. This application Mar. 3, 1980, Ser. No. 126,443
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1976, 2612783
Int. Cl.³ C07C *103/87*
U.S. Cl. 560—169 1 Claim

1. Process for the manufacture of a completely or partially blocked compound having the formula



(I)

wherein R denotes the radical



and one to three units of R are present in the compound and wherein, in the case wherein one or two units of R having this meaning are present, the remaining radical R denotes the radical —NCO, and wherein R^1 denotes the methyl, ethyl, propyl, isopropyl, n-butyl, tert.-butyl, isobutyl, sec.-butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl or dodecyl radical, characterized in that an acetoacetic acid alkyl ester in which the alkyl radical consists of the methyl, ethyl, propyl, isopropyl, n-butyl, tert.-butyl, isobutyl, sec.-butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, or dodecyl, is reacted, by warming, in the presence of zinc acetoacetonate as catalyst, with an about 75 percent strength by weight solution of a triisocyanate containing biuret groups having an NCO content of 16.5 to 17.0 percent by weight and which triisocyanate has been obtained by reacting three moles of hexamethylene diisocyanate with one mol of water, and for every NCO group to be blocked in the ratio of acetoacetic acid ester: NCO of 1 to 1.1:1, to obtain a compound of formula I.

4,332,966
PROCESS FOR PRODUCING 3-PENTENOIC ESTERS

Nobuo Isogai; Motoyuki Hosokawa; Takashi Okawa; Natuko Wakui, and Toshiyasu Watanabe, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 21, 1980, Ser. No. 199,332
Claims priority, application Japan, Dec. 17, 1979, 54/163840; Sep. 8, 1980, 55/124255
Int. Cl.³ C07C *67/36*
U.S. Cl. 560—206 11 Claims

1. In a process for producing a 3-pentenoic ester which comprises reacting butadiene, carbon monoxide and an alcohol in the presence of cobalt carbonyl catalyst and a solvent,

the improvement wherein the reaction is carried out in a reaction medium composed of at least two solvents selected from the group consisting of pyridine, quinoline, isoquinoline and substituted pyridine, substituted quino-

line and substituted isoquinoline in which substituent or substituents are selected from the group consisting of alkyl having 1–6 carbon atoms, alkenyl having 1–6 carbon atoms, aryl, alkylaryl having 7–10 carbon atoms and aralkyl having 7–10 carbon atoms, and wherein any one of said at least two solvents is present in an amount of more than 2 moles % on the basis of total moles of the solvents.

4,332,967

COMPOUNDS CONTAINING SULFUR AND AMINO GROUPS

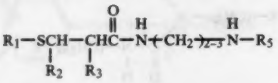
Neil E. S. Thompson, Creve Coeur; Derek Redmore, Webster Groves; Bernardus A. Onde Alink, St. Louis, and Benjamin T. Outlaw, Webster Groves, all of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

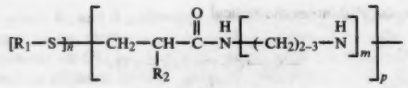
Filed Jun. 19, 1980, Ser. No. 161,198

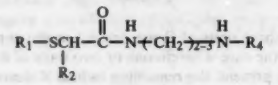
Int. Cl.³ C07C *103/44*

U.S. Cl. 564—162 **6 Claims**

1. A composition selected from the group consisting of;







where

R_1 is a hydrocarbon group, R_2, R_3 are H or alkyl,

R_4, R_5 are H, alkyl, alkanol, or —alkylene $N)_nH$,

n, m or p are one or more,

and mixtures thereof.

4,332,968

IMINES FROM MESITYL OXIDE

Lawrence A. Smith, Jr., Houston, Tex., assignor to Chemical Research & Licensing Company, Houston, Tex.

Continuation-in-part of Ser. No. 108,790, Dec. 31, 1979, abandoned, which is a division of Ser. No. 889,360, Mar. 23, 1978, Pat. No. 4,306,068. This application Sep. 8, 1980, Ser. No. 185,296

Int. Cl.³ C07C *119/12*

U.S. Cl. 564—278 **4 Claims**

1. The method of producing a compound of the structure

wherein R is an aliphatic, olefinic or aromatic organic radical having 2 to 30 carbon atoms, comprising contacting an organic primary amine having the structure $R—NH_2$ with mesityl oxide in a reactor to produce said compound and acetone and removing acetone or said adduct from said reactor by fractionation.

4,332,969

SUBSTITUTED 11-AMINOUNDECANOLS

Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Adolf Hubele, Magden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

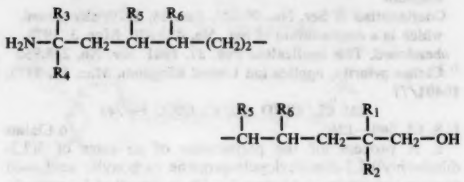
Continuation of Ser. No. 923,436, Jul. 10, 1978, abandoned. This application Feb. 26, 1980, Ser. No. 124,690

Claims priority, application Switzerland, Jun. 19, 1977, 8914/77

Int. Cl.³ C07C *85/20, 87/40, 87/453, 91/04*

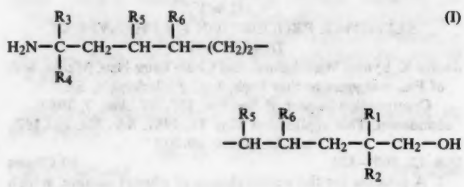
U.S. Cl. 564—460 **8 Claims**

1. A compound of the formula



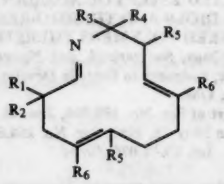
in which R_3, R_5 and R_6 are each hydrogen, R_1 and R_2 independently of one another are alkyl having 1–4 C atoms or together with the bonding C atom are cyclohexyl and R_4 is alkyl having 1–7 C atoms.

7. A process for the preparation of a compound of formula I



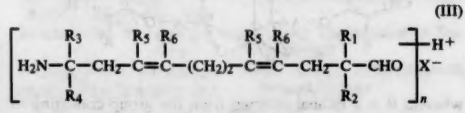
(I)

in which R_1 and R_3 independently of one another are hydrogen or alkyl having 1–8 C atoms and R_2 and R_4 independently of one another are alkyl having 1–8 C atoms, or R_1 and R_2 and/or R_3 and R_4 together with the bonding C atom form a cycloaliphatic ring having 4–8 C atoms, and R_5 and R_6 independently of one another are hydrogen or alkyl having 1–4 C atoms, which comprises converting a 1-aza-1,5,9-cyclododecatriene of the formula II



(II)

in an aqueous or aqueous-organic medium in the presence of an inorganic acid which is non-oxidising under the reaction conditions, to a compound of the formula III



(III)

in which X is the anion of an inorganic acid which is nonoxidis-

ing under the reaction conditions and n is an integer corresponding to the valency of X, and then catalytically hydrogenating the compound of the formula III to give a compound of the formula I.

4,332,970

ACETYL HYDRINDACENES, ACETYL INDANES, MIXTURES OF SAME, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel; Joaquin Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 156,772, Jun. 5, 1980, Pat. No. 4,284,819, which is a division of Ser. No. 953,180, Oct. 20, 1978, Pat. No. 4,209,543. This application Mar. 25, 1981, Ser. No. 247,636

Int. Cl.³ C07C *45/46, 2/70*

U.S. Cl. 568—319 9 Claims

1. A process for preparing 4-isopropyl-3,3,8,8-tetramethyl-as-hydrindacene comprising the step of intimately admixing cumene, isoprene and 6-isopropyl-1,1-dimethylindane in the presence of sulfuric acid at a temperature in the range of from about 0° C. up to about 5° C. thereby forming a mixture of cumene, 6-isopropyl-1,1-dimethylindane and 4-isopropyl-3,3,8,8-tetramethyl-as-hydrindacene; then fractionally distilling the resulting mixture and recycling the cumene and 6-isopropyl-1,1-dimethylindane back into the reaction mass and separating out and thereby recovering said 4-isopropyl-3,3,8,8-tetramethyl-as-hydrindacene; the mole ratio of the cumene to 6-isopropyl-1,1-dimethylindane being adjusted such that the net amount of the 6-isopropyl-1,1-dimethylindane formed during the reaction is equal to the amount of 6-isopropyl-1,1-dimethylindane originally charged to the reaction mass; the mole ratio of the 6-isopropyl-1,1-dimethylindane:cumene being within the range of from about 2:1 up to about 3:1; the mole ratio of the sum of cumene and 6-isopropyl-1,1-dimethylindane:isoprene being within the range of from about 2:1 up to about 6:1; the sulfuric acid being used being concentrated sulfuric acid and being from about 85 weight percent aqueous sulfuric acid up to about 95 weight percent aqueous sulfuric acid; the concentration of said concentrated sulfuric acid being used in the reaction mass varying from about 15% up to about 40% based on the total weight of said reaction mass.

4,332,971

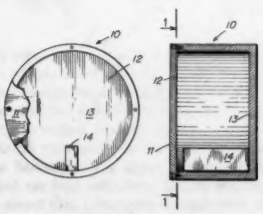
PROCESS FOR THE OXIDATION OF OLEFINICALLY UNSATURATED HYDROCARBONS TO ALDEHYDES USING ATTRITION RESISTANT CATALYSTS

Charles A. Dalton, and William E. Slinkard, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 65,256, Aug. 9, 1979, Pat. No. 4,276,196. This application Dec. 15, 1980, Ser. No. 216,399

Int. Cl.³ C07C *45/35, 47/21*

U.S. Cl. 568—480 5 Claims



1. In a process for the oxidation of olefinically unsaturated hydrocarbons containing 3 to 5 carbon atoms to the corresponding olefinically unsaturated aldehydes, the improvement comprising reacting, in the vapor phase, said olefinically unsaturated hydrocarbon with molecular oxygen in the presence of an improved attrition resistant oxidation catalyst prepared by:

(1) wetting an essentially inert porous support capable of holding finely divided active catalytic material on its outer surface with a sufficient amount of aqueous silica sol containing from about 20 to about 40 weight percent silica, based on the weight of aqueous silica sol, to provide a wetted support which contains up to the maximum amount of aqueous silica sol which the support can sorb without having the appearance of liquid on the outer surface of said wetted support;

(2) coating the outer surface of said wetted support with a uniformly appearing coating of a dried precursor of a finely divided catalytically active oxide material having the empirical formula:

$$Mo_{12}Bi_aNi_bFe_cCo_dL_eM_fO_x$$

wherein Mo, Bi, Ni, Fe, Co and O respectively are the elements molybdenum bismuth, nickel, iron cobalt and oxygen; L is at least one element selected from potassium and rubidium; M is at least one element selected from phosphorous, cerium, germanium, manganese, niobium, antimony and tanralum; a, b, c, d, e, f, are respectively numbers of atoms of Bi, Ni, Fe, Co, L, M: wherein a is 0.3–3; b is 1–6; c is 1–6 di is 1–7; e is 0.05–2 and f is 0.3–06; and x represents the number of oxygen atoms sufficient to satisfy the valence requirement of the other elements for the oxidation of olefinically unsaturated hydrocarbons to the corresponding unsaturated aldehydes, said precursor having been heated at a temperature of from about 200° C. to about 350° C. in the presence of molecular oxygen for a period of time sufficient to remove the majority of the volatiles therefrom; and

(3) calcining said coated wetted support at a temperature of from about 400° C. to 570° C. to provide a thermodynamically stabilized catalyst, having the desired catalytic activity for the oxidative conversion of olefinically unsaturated hydrocarbons to the corresponding unsaturated aldehydes, combined with a special attrition index not exceeding about 10 weight percent.

4,332,972

MODIFIED ZINC FERRITE OXIDATIVE DEHYDROGENATION CATALYSTS IN OXIDATIVE DEHYDROGENATION

Harold F. Christmann, Seabrook, and Edward J. Miklas, Conroe, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation of Ser. No. 540,335, Jan. 13, 1975, abandoned, which is a division of Ser. No. 502,305, Sep. 3, 1974, Pat. No. 3,960,767. This application Sep. 8, 1978, Ser. No. 940,478

Int. Cl.³ C07C *5/48*

U.S. Cl. 585—442 7 Claims

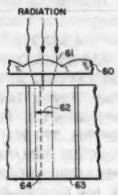
1. In the process of oxidative dehydrogenation of organic compounds having from about 2 to about 20 carbon atoms and at least one

group in the presence of a pelleted powder of a zinc ferrite catalyst composition having the empirical formula $Zn_xFe_yO_z$ wherein x is from 0.1 to about 2, y is about 0.3 to about 12 and z is about 3 to about 18 at a temperature of from about 500° F. to about 1,200° F. to thereby produce a dehydrogenated compound having the same number of carbon atoms, the improvement which comprises incorporating into said catalyst composition zinc carbonate by admixing (1) powdered zinc carbonate in an amount of from about 0.1 to about 25 wt.% determined on the basis of zinc oxide and based on the weight of the zinc ferrite composition, (2) powdered zinc ferrite and (3) aqueous phosphoric acid in an amount to dampen the powder mixture of zinc ferrite and zinc carbonate, and pelletizing the mixture.

4,332,973
HIGH INTENSITY SOLAR CELL

Bernard L. Sater, 9007 Westlawn Blvd., Olmsted Falls, Ohio 44138

Division of Ser. No. 522,244, Nov. 8, 1974, abandoned. This application Aug. 11, 1978, Ser. No. 932,903
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—246 **5 Claims**

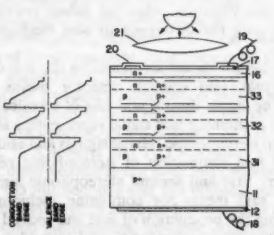


1. Photovoltaic means for producing an electrical output from incident solar radiation, said photovoltaic means comprising a plurality of unit semiconductor solar cells each having at least one p-n junction, said p-n junctions being arranged in planes lying substantially parallel to the direction of the incoming radiation on the light-receiving surfaces of said cells, and optical radiation-focusing means comprising a corresponding plurality of optical elements having their optical axes arranged in spaced parallel relation in planes parallel to the planes of said p-n junctions, each of said optical axes being respectively offset with respect to the planes of said p-n junctions, said radiation-focusing means thereby being effective to focus incident radiation onto said light-receiving surfaces as beams which are in primary adjacency to the planes of each of said p-n junctions, whereby radiation incident upon said light-receiving surface is directed essentially in the vicinity of each of said p-n junctions.

4,332,974
MULTILAYER PHOTOVOLTAIC CELL

Lewis M. Fraas, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 52,707, Jun. 28, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,803
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—249 **10 Claims**



1. A high efficiency, multijunction photovoltaic solar cell for use with a light concentrating element comprising:

(a) a single crystal, single element substrate without an internal light sensitive junction, said substrate capable of lattice matching to within ±1% to a $Ga_{0.88}In_{0.12}As$ semiconductor material responsive in the sun light range,

(b) a first homogeneous layer of semiconductor material deposited on said substrate, lattice matched thereto and having about $Ga_{0.88}In_{0.12}As$ composition with a semiconductor bandgap of 1.25 ev., and absorbing sun light energy at a first wavelength,

(c) a second homogeneous layer of semiconductor material deposited on said first layer lattice matched to said first homogeneous layer and having about $Ga_{0.69}In_{0.31}As_{0.5}P_{0.5}$ composition with a semiconductor bandgap of 1.5 ev., and absorbing sun light energy at a second wavelength,

(d) a third homogeneous layer of semiconductor material deposited on said second layer lattice matched to said second homogeneous layer and having about $In_{0.5}Ga_{0.5}P$ composition with a semiconductor bandgap of 1.85 ev., and absorbing visible light energy at a third wavelength,

(e) said first, second and third layer each having essentially the same lattice constant as said single crystal substrate to within ±1%,

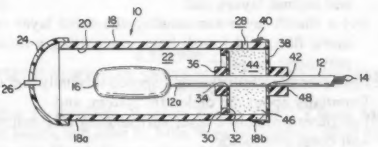
(f) said first, second and third layer each containing a light sensitive p/n homojunction and each layer having a tunneling, shorting heterojunction with the layer immediately above and below it,

(g) said first, second and third layers each developing essentially the same zero voltage light generated current as the other layers.

4,332,975
SEALED CABLE ENCLOSURE AND CABLE ASSEMBLY INCLUDING SAME

Zoltan B. Dienes, Annandale, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Jun. 13, 1980, Ser. No. 159,067
Int. Cl.³ H02G *15/04*
U.S. Cl. 174—76 **29 Claims**



1. A sealed cable assembly, comprising:

an electrical cable; and

a rigid enclosure surrounding a portion of said cable, said enclosure comprising an elongate, hollow housing having inner wall surfaces defining a chamber and an opening for receiving said cable therein; a seal enclosing one end of said housing; at the other housing end an outer wall extending transversely across and covering said opening; an inner wall spaced longitudinally interiorly of said outer wall extending transversely across said opening within said inner wall surfaces; said inner and outer walls each having an aperture for passage of said cable therethrough, a portion of said cable extending interiorly into said chamber; said inner and outer walls defining with said housing inner wall surfaces a cavity; the housing portion in registry with said cavity having a filling aperture therethrough, opening into said cavity; an expanded foamed resinous material substantially filling said cavity; and means inclusive of said inner wall responsive to said foamed resinous material for providing a seal between said cavity and said chamber, whereby said chamber surrounding said cable portion is sealed at both ends thereof.

4,332,976
COAXIAL CABLES

Richard E. Hawkins, Colchester, Vt., assignor to Champlain Cable Corporation, Wilmington, Del.

Filed Jun. 5, 1980, Ser. No. 156,546
Int. Cl.³ H01B *7/18*
U.S. Cl. 174—107 **7 Claims**

1. A coaxial cable comprising:

(a) an inner conductor;

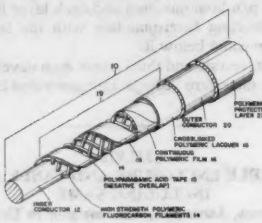
(b) a dielectric system comprising:

(i) a first layer of braided high tensile strength polymeric

fluorocarbon filaments surrounding said inner conductor in an open weave along the length of the inner conductor;

(ii) a second layer of cellular polyparabanic acid tape surrounding circumferentially said first layer, said second layer being helically wound with a negative overlap along the length of the inner conductor so as to leave spaces between wraps of said tape about said first layer;

(iii) a third layer circumferentially surrounding said second layer, said third layer comprising a high strength polymeric film that remains stable at temperatures up to 150° C. providing a continuous skin enclosing said first and second layers; and



(iv) a fourth layer surrounding the third layer of polymeric film, said fourth layer comprising a crosslinked polymeric lacquer;

(c) an outer conductor being disposed coaxially and circumferentially about the dielectric system; and

(d) an outer protective layer surrounding circumferentially said outer conductor.

4,332,977

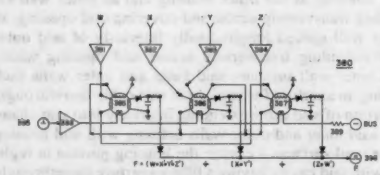
TELETYPEWRITER PRIVACY SYSTEM

Laurance F. Safford, Washington, D.C., assignor to American Standard Inc., New York, N.Y.

Filed Jun. 12, 1962, Ser. No. 201,985

Int. Cl.³ H04L 9/02

U.S. Cl. 178—22.14 **21 Claims**



1. A teletypewriter privacy system comprising a first and a second pair of terminals responsive to printing-telegraphy signals having start bauds; means for generating program signals having a fixed timing relationship with the start bauds of said telegraphy signals; a mixer circuit coupled between said terminals, and responsive to said program signals; said mixer circuit including a first switch coupled to said first pair of terminals, and a second switch coupled to said second pair of terminals, means responsive to a start baud at said first pair of terminals for maintaining said first switch operative to couple said first pair of terminals to said mixer circuit for one telegraph character, means responsive to a start baud at said second pair of terminals for maintaining said second switch operative to couple said second pair of terminals to said mixer circuit for one telegraphy character, first polarized switch means responsive to the telegraphy signal at the first pair of terminals and the program signal for selectively activating said second switch, and second polarized switch means responsive to the telegraphy bauds at the second pair of terminals and the program signal for selectively activating said first switch.

19. In combination, an electrical switching circuit for generating four pseudo-random binary electrical signals that correspond to W, X, Y and Z, and another electrical circuit for combining, through logical OR gates, said electrical signals to generate a further electrical signal representing $W\overline{X}Y\overline{Z}+X\overline{Y}+Z\overline{W}$, for use as a key for encoding a communication signal.

4,332,978

LOW FREQUENCY AM STEREOPHONIC BROADCAST AND RECEIVING APPARATUS

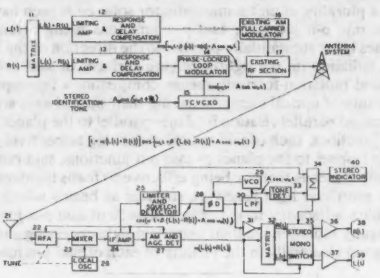
Robert D. Streeter, Fort Wayne, Ind., assignor to The Magnavox Consumer Electronics Co., Fort Wayne, Ind.

Continuation of Ser. No. 779,392, Mar. 21, 1977. This application Apr. 23, 1980, Ser. No. 143,154

The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.

Int. Cl.³ H04H 5/00

U.S. Cl. 179—1 GS **12 Claims**



11. A receiver for detecting a broadcast signal, said signal containing first and second stereophonic related signals modulated thereon, comprising:

means for detecting amplitude variations of said broadcast signal, said means providing a signal representing the summation of said stereophonic related signals;

means for detecting phase variations of said broadcast signal, said phase variation detecting means providing a signal representing the difference of said stereophonic related signals;

squelch detector means for detecting the loss of said broadcast signal, said squelch detector means providing a switching signal during said loss of broadcast signal;

means for combining said signal representing said difference between stereophonic related signals and said signal representing said summation of stereophonic related signals, whereby first and second stereophonic signals are produced, said means for combining including means for inhibiting the production of first and second stereophonic related signals in response to said switching signal.

4,332,979

ELECTRONIC ENVIRONMENTAL ACOUSTIC SIMULATOR

Mark L. Fischer, 555 Middlefield Rd., Apt. P206, Mountain View, Calif. 94040

Continuation of Ser. No. 970,996, Dec. 19, 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,774

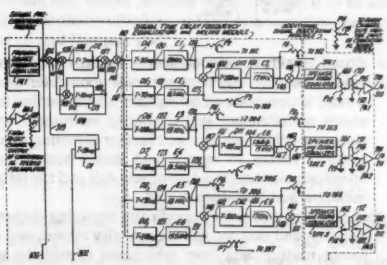
Int. Cl.³ H04R 5/00

U.S. Cl. 179—1 GQ **3 Claims**

1. A sound reproduction system for a listening area classified as an environmental acoustic simulator providing enhancement of left and right stereophonic signal sources from a conventional stereo sound system which are delayed, equalized and mixed in certain combinations to form six channels and then

further mixed, equalized and amplified to drive 36 loudspeakers in 18 loudspeaker enclosures, said system comprising;

(a) the signal preconditioner module comprised of two identical submodules designated left and right deriving their input signals from the respective left and right preamplifier tape outputs, main preamplifier outputs or the like of the left and right stereophonic signal sources of a conventional stereo sound system, said submodules comprised of high input impedence buffer amplifiers, control potentiometers for signal level adjustment, adjustable frequency response equalizer means to compensate for variations in the tonal balance of the source signals, time delay units to provide a 25 millisecond delayed signal from one channel into the other, mixers to provide means for an adjustable mixture of signals with corresponding signals of the opposite channel, a controlled reverberation network consisting of means for time delay, mixers and potentiometers providing signal delays of 7 milliseconds, 10 milliseconds and their additive combinations generating the respective left and right output signals for the signal time delay frequency equalization and mixing module, said preconditioner module also providing left and right equalized but undelayed outputs controllable by potentiometers optionally connected to the tape monitor input of the preamplifier of the conventional stereo sound system or to the main power amplifier inputs of the conventional stereo sound system, said potentiometers being mechanically controlled by the same actuator shaft which simultaneously controls the overall gain of the simulator output;



(b) the signal time delay frequency equalization and mixing module comprised of two identical submodules designated left and right deriving their inputs from the respective left and right outputs of the signal preconditioner module, said submodules comprising multiple time delay means providing delays of 30 milliseconds, 70 milliseconds, 100 milliseconds, 140 milliseconds, 170 milliseconds and 210 milliseconds, multiple frequency equalization means providing 3 decibels of attenuation with respect to the midfrequency region at 20 Kilohertz, 19.5 Kilohertz, 19 Kilohertz, 18.5 Kilohertz, 18 Kilohertz and 17.5 Kilohertz, respectively, additional multiple mixers and time delay means providing delays of 145 milliseconds and 290 milliseconds to create in total time delays from both the left and right submodule of up to 4,000 milliseconds, multiple equalization means providing 1½ and 3 db of attenuation at 17 Kilohertz with respect to the midfrequency region, additional mixers and potentiometers providing means to controllably recirculate and crossblend between submodules, their signals from the corresponding left and right channels, there being generated a total of six outputs from the submodules designated as left front, left side, left rear, right front, right side, and right rear for connection to the additional signal processing module;

(c) additional signal processing module consisting of six identical submodules designated as left front, left side, left rear, right front, right side, and right rear, each deriving its input from the corresponding output of the signal delay, frequency equalization and mixing module, each submodule comprising an adjustable frequency equalizer, 2 volume control potentiometers and a high fidelity audio amplifier generating six outputs designated as left front, left side, left rear, right front, right side, right rear suitable for driving the loud speaker systems;

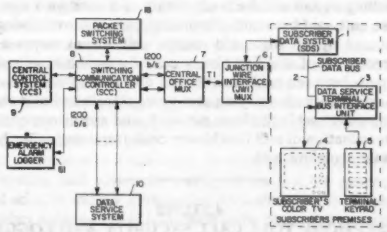
(d) the loudspeaker system comprised of six identical speaker banks designated left front, left side, left rear, right front, right side and right rear, each bank energized by the output of the corresponding additional signal pocessing submodule, each bank comprising three loudspeaker enclosures, each enclosure containing typically 4 inch diameter, 8 ohm full range acoustic suspension high fidelity speakers, wherein two loudspeakers are mounted in series and electrically out of phase in each enclosure to radiate their energy indirectly into the environment, the loudness of each pair of speakers in each enclosure controlled by a 16 ohm, 10 watt, L-pad, three (3) enclosures per speaker bank or group, each of the speaker banks two or more feet from the ceiling with the drivers' axes pointing at the ceiling and nearby walls to take full advantage of the reflective properties of the boundary structure, with one enclosure in the left front bank and one enclosure in the right front bank located near the level of the speakers of the conventional stereo sound system which should be placed from 2 to 4 feet from the floor to simulate early delays arriving close to source, with left and right corresponding banks placed symmetrically and positioned such that each left enclosure is out of phase with its opposite on the right and the speakers within each bank are positioned such that each driver is out of phase with the one adjacent to it.

4,332,980

MULTIPLE SERVICES SYSTEM USING TELEPHONE LOCAL LOOP

Christopher C. Reynolds, Satellite Beach; Earl J. Claire, Melbourne Beach, and John R. Ellis, West Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed May 30, 1980, Ser. No. 154,825
Int. Cl.³ H04M *11/04*
U.S. Cl. 179—2 A **43 Claims**



1. A multiple services system using telephone transmission lines comprising

a microprocessor-controlled subscriber data system to be located on subscriber premises including a subscriber data bus, at least one data service terminal connected to said bus, at least one alarm condition monitor and microprocessor control means connected to said bus and said alarm condition monitor for controlling the transmission of signals derived therefrom;

a central control system for processing signals applied thereto, including alarm signals;

a data service system for providing data communications to be transmitted to said subscriber data system on request; and

switching communication controller means connected to said subscriber data system via telephone transmission lines for connecting said subscriber data system to said central control system in the case of transmission of alarm

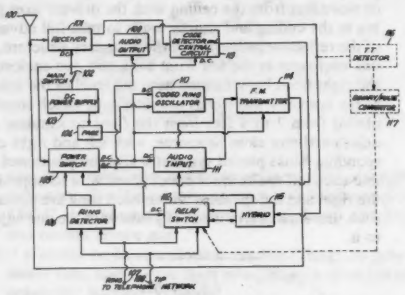
signals and for selectively switching connection of said subscriber data system to said data service system for effecting bidirectional transmission of data communications between said data service system and said subscriber data system in response to an initiating request from said subscriber data system.

4,332,981

CORDLESS TELEPHONE

Edward R. Palombi, 435 E. 65th St., New York, N.Y. 10020, and Joseph H. Vogelman, 48 Green Dr., Roslyn, N.Y. 11576, assignors to Edward Rossi Palombi, New York and Joseph Herbert Vogelman, Roslyn, both of, N.Y.

Filed Aug. 15, 1980, Ser. No. 178,358
Int. Cl.³ H04Q 7/04
U.S. Cl. 179—2 EA **12 Claims**



7. A cordless telephone system, comprising a remote unit, said remote unit comprising means for generating a first binary code uniquely identifying said remote unit, microphone means for receiving voice signals from a remote unit user, means for modulating a low-frequency subcarrier signal with said first binary code, means for generating telephone system switching signals, and means for selectively combining said first binary code-modulated subcarrier signal, said voice signals and said switching signals and for transmitting said combined signals to a base unit, said base unit comprising, means for receiving said combined signals from said remote unit, means responsive to the reception of said first binary code for establishing a signaling path between said remote unit and a telephone network, said signaling path carrying said voice signals and said switching signals to said telephone network, and means responsive to the termination of said first binary code transmission for breaking said signaling path.

4,332,982

TELEPHONE TOLL CALL SECURITY AND LOGGING DEVICE AND METHOD

Ralph H. Thomas, Bath, Ohio, assignor to Ident-A-Call, Inc., Akron, Ohio

Filed Sep. 5, 1980, Ser. No. 184,242
Int. Cl.³ H04M 1/66
U.S. Cl. 179—7.1 R **12 Claims**

1. A device to control access to and log telephone calls made upon a long-distance telephone network, comprising:

a telephone instrument;

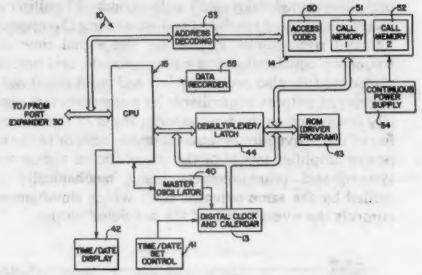
telephone line interface means for selectively connecting said telephone instrument to an incoming telephone line and a local telephone power supply system, said telephone line interface means providing output signals indicative of the operational status of said telephone instrument and all numbers dialed on said telephone instrument;

clock and calendar means for continuously providing output signals indicative of the present date and time-of-day;

access code memory means for storing and providing output signals indicative of a plurality of security codes authorized for utilization of the long-distance telephone network;

first and second log memory means for temporarily storing data regarding all outgoing long-distance telephone calls made from said telephone instrument;

control means for receiving said output signals from said telephone line interface means, said clock and calendar means and said access code memory means, said control means monitoring said telephone line interface means and upon detection of a dialed digit initiating a tie-in to the long-distance telephone network directing the connection of said telephone instrument to said local telephone power supply system and connection of said incoming telephone line to a holding load, said control means comparing the next preselected plurality of dialed digits received to those



stored in said access code memory means to determine the validity thereof, said control means upon determination of a valid access code directing said telephone line interface means to reconnect said telephone instrument with said incoming telephone line and further directing one of said memory means to record said dialed access code and telephone number, the date of said call and the time of call initiation and termination; and,

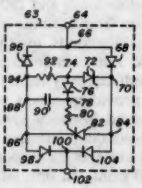
data recorder means for periodically receiving data stored in said first and said second log memory means, said control means routing data from whichever of said log memory means is substantially filled with data to said data recorder means while employing the other said log memory means to record data for toll calls made during the time of data transfer.

4,332,983

TELEPHONE PRIVACY CONTROLLER

Hosein Vakili, 273 Marchmont Dr., Los Gatos, Calif. 95030

Filed Oct. 27, 1980, Ser. No. 200,934
Int. Cl.³ H04M 1/70
U.S. Cl. 179—17 B **1 Claim**



1. A telephone privacy controller for a party line comprising, at each telephone on said party line:

a first terminal being connected to one of the leads of the party line pair;

a first steering diode connected to the first terminal;

a second terminal connected to the first steering diode whereby current may flow from the first terminal to the second terminal;

a silicon controlled rectifier connected to the second terminal, the third silicon controlled rectifier including a gate input for receiving pulses whereby the silicon controlled rectifier will permit current flow upon receipt of said pulses at said gate;

a Zener diode with one element connected to the second terminal and one element connected to a second steering diode and a resistive element;

a third terminal connected to the output of the silicon controlled rectifier;

capacitive means coupled to said gate of the silicon controlled rectifier and to the third terminal, the capacitive means including a capacitor and a resistor connected in series between said gate input of the silicon controlled rectifier and the output of the silicon controlled rectifier, the common junction of said resistor and capacitor being common to said second diode;

a third steering diode connected to the third terminal and to the first terminal whereby current may flow from the third terminal to the first terminal;

a fourth steering diode connected to the third terminal;

a fourth terminal connected to the fourth steering diode whereby current may flow from the terminal to the fourth terminal; said fourth terminal being connected to its associated telephone which is, in turn, connected to the other lead of said line pair and

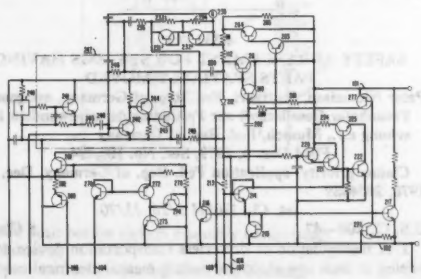
a fifth steering diode connected between the fourth and second terminals whereby current may flow between the fourth terminal to the second terminal.

4,332,984

ACTIVE SPEECH NETWORK CIRCUIT FOR A TELEPHONE SET

Paul C. Davis, Reading, Pa.; Raymond G. Jackson, Indianapolis, Ind.; Kenneth F. Sodomsky, Reading, Pa., and Dennis L. Whitson, Blue River Township, Hancock County, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 13, 1979, Ser. No. 103,404
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—81 R **28 Claims**



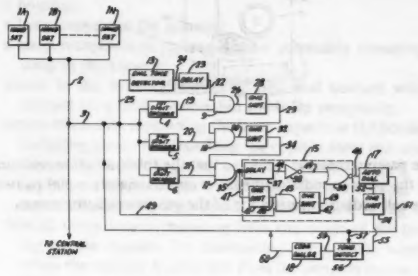
15. An active speech network for a telephone set comprising a pair of line terminals (101, 102) with a specific level of voltage and current available, a resistance network (280, 281) serially connected with a capacitor (282) across the line terminals, the resistance network and capacitor in combination with a control element (210–215) providing a first dc voltage level with the active speech network in a first operating condition and a second dc voltage level with the active speech network in a second operating condition.

4,332,985

AUTOMATIC CALLING METHODS AND APPARATUS

Richard I. Samuel, Westfield, N.J., assignor to Jayem Dialer Corp., Westfield, N.J.

Filed Mar. 28, 1980, Ser. No. 134,951
Int. Cl.³ H04M *1/274*
U.S. Cl. 179—90 BD **48 Claims**



1. Automatic calling apparatus responsive to an actuating signal generated by any of a plurality of telephone handsets commonly connected to at least one telephone line and through said at least one telephone line to a switched telephone network for selectively initiating a calling sequence, said apparatus comprising:

input/output conductor means connected to said telephone line for receiving signal information applied to said telephone line from any of said plurality of handsets and for applying calling information to said telephone line, said input/output conductor means being connected to said telephone line in a manner to permit all signal information initially applied to said telephone line from any of said handsets to be further applied to said switched telephone network;

means connected to said input/output conductor means for determining that one of said plurality of telephone handsets connected to said telephone line has been actuated by a user;

means connected to said input/output conductor means for detecting signal information applied to said telephone line by an actuated one of said plurality of handsets for activating said automatic calling apparatus to cause said automatic calling apparatus to apply selected calling information to said telephone line; and

means responsive to a detection of said signal information for activating said automatic calling apparatus for generating said selected calling information corresponding to telephone number information of a location to be contacted and applying said calling information generated to said telephone line through said input/output conductor means.

4,332,986

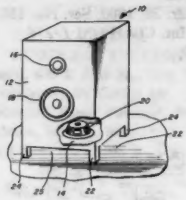
SPEAKER SYSTEM EMPLOYING PASSIVE RADIATOR

John L. Butler, Marshfield, Mass., assignor to Image Acoustics, Inc., North Marshfield, Mass.

Filed Jan. 31, 1980, Ser. No. 117,376
Int. Cl.³ H04R *1/28*; H05K *5/00*
U.S. Cl. 179—146 E **6 Claims**

1. A speaker system comprising; a speaker enclosure including a plurality of walls including a front wall and a bottom wall, the bottom wall facing the floor upon which the speaker system rests, means supporting the speaker enclosure and the bottom wall above the floor and defining an open space below the bottom wall having at least one port communicating with the bottom space to permit the communication of low-frequency sounds, at least one low-frequency speaker, and a passive radiator means supported at said bottom wall and directly facing the floor to direct signals into said space below said bottom wall, said at least one port defined between legs for

supporting the enclosure, wherein the height of the port is small in comparison to the wavelength of sound radiated by



the passive radiator means so that the total radiation resistance of the passive radiator means is approximately equal to twice the self-radiation resistance of the passive radiator means.

4,332,987

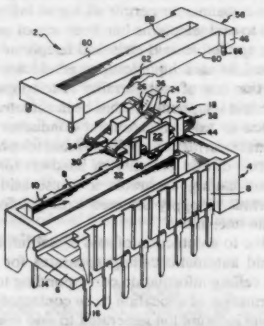
DIP SWITCH

Norman E. Hoffman, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 15, 1980, Ser. No. 216,360

Int. Cl.³ H01H *15/02*

U.S. Cl. 200—16 D **8 Claims**



1. A DIP switch comprising a housing having a base surface and sidewalls defining a channel therebetween, said base surface having circuitry means thereon;

slide body means receivable in and moveable along said channel, said body means having a plurality of spaced apart and parallel arms projecting forward therefrom, each said forward arm having a free, reversely formed, end segment projecting backwards toward, and superior to said body; and said slide body means having a plurality of spaced apart and parallel conductive arms, electrically and mechanically connected at one end and projecting rearward from said slide body means, each said rearward conductive leg having a reversely formed and depending opposite end sgement for engaging said circuitry means; and

cover means for enclosing the top of said channel, and compressing said forward arm segments thereagainst, and said rearward opposite end segments against said circuitry means.

4,332,988

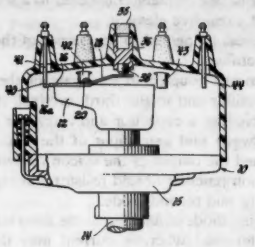
RADIO FREQUENCY INTERFERENCE SUPPRESSING IGNITION DISTRIBUTOR

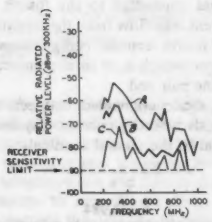
Dennis F. Dungan, Mt. Clemens, and Wey-Chaung Kuo, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1980, Ser. No. 206,022

Int. Cl.³ H01H *19/00*; F02P *7/00*

U.S. Cl. 200—19 DC **2 Claims**





1. In an ignition distributor of the type wherein a movable electrode electrically connected to the secondary winding of an ignition coil is passed in ignition spark gap relationship with at least one stationary electrode electrically connected to a corresponding spark plug, the improvement wherein each stationary electrode is formed of an electrically resistive, resin bonded mixture of metal, carbon and ferrite powders suppressive of radio frequency interference energy generated by an ignition spark.

4,332,989

SAFETY ARRANGEMENT FOR SYSTEMS HAVING PARTS SPATIALLY MOVED

Peter Nicolaisen, Stuttgart, Fed. Rep. of Germany, assignor to Fraunhofer Gesellschaft zur Forderung der argewandten Forschung e.v., Munich, Fed. Rep. of Germany

Filed Dec. 6, 1979, Ser. No. 100,774

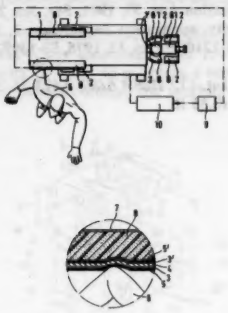
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854459

Int. Cl.³ H01H *3/16, 13/70*

U.S. Cl. 200—47 **5 Claims**

1. A manipulation or driverless transportation device comprising at least one electrical switch means, electrical control means, and means connecting said switch means to said control means, said switch means being arranged at those locations on said device where said switch means is actuated, upon collision of said device and contact of said switch means with a person or object, to cause said control means to shut off the movement of said device or initiate an emergency operation program causing a sequence of movements opposite to the direction of said collision, said switch means comprising at least one planar laminate on the surfaces of those parts of said device which will contact said person or object upon collison therewith, said laminate comprising a continuous layer of a normally electri-

cally insulating plastic material which becomes electrically conductive upon being compressed, a continuous, electrically conductive layer contiguous to each of the opposite surfaces of said normally electrically insulating plastic material layer, and a deformable layer for receiving impact energy and extending



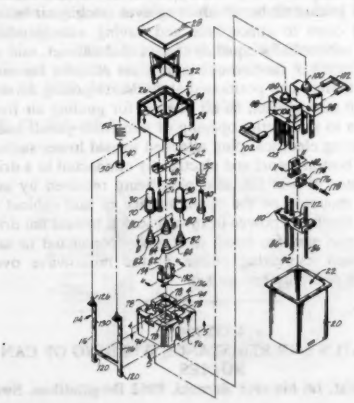
along the side of one of said electrically conductive layers opposite said normally electrically insulating plastic material layer, whereby said switch means may be actuated and an electrical circuit may be closed upon compression of said laminate at any and all points therealong.

4,332,990

MINIATURE ILLUMINATED PUSH BUTTON SWITCH AND INDICATOR LIGHT

Curtis R. Stevens, Mission Viejo, Calif., assignor to Master Specialties Co., Costa Mesa, Calif.

Filed May 19, 1980, Ser. No. 151,160
Int. Cl.³ H01H 9/16; G08B 5/00
U.S. Cl. 200—314 **23 Claims**



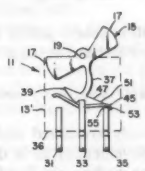
1. A push button switch assembly comprising:
a housing;
a push button projecting from the housing;
switch means in the housing;
a switch actuator on the push button inside the housing;
a plurality of lamp receptacles in the push button for receiving lamps for illuminating the push button;
a plurality of conductive volute springs in the housing adjacent the lamp receptacle, each volute spring having an axis along which it can be compressed;
means movably supporting the push button in the housing to align the switch actuator with the switch means to operate the switch means and to align a contact of a lamp in each lamp receptacle with the axis of a volute spring, each lamp contact being in spring-biased contact with a spring, the push button being movable into the housing for moving the switch actuator to actuate the switch means; and
a base inside the housing below the push button, means on the base for supporting the volute springs below the lamp receptacles, and means securing the switch means to the base inside the housing below the switch actuator.
17. An indicator light assembly comprising:
a housing;
a lamp capsule in the housing;
a lamp receptacle in the capsule for releasably mounting a lamp in the capsule;
means in the housing providing electrical contact with a contact on a lamp mounted in the lamp receptacle;
means releasably supporting the lamp capsule in the housing, including means for detaching the capsule from the means releasably supporting the lamp capsule by pulling the capsule away from the housing and for reattaching the capsule by pushing the capsule back into the housing; and
flexible hinge means extending from the inside of the housing to the capsule for maintaining the capsule captive when the capsule is detached from the support means, the hinge means including at least a pair of spaced apart, elongated flexible and foldable filament-like members extending from opposite sides of the capsule to opposite sides of a fixed base of support inside the housing.

4,332,991

ELECTRICAL TOGGLE SWITCH

Arnold B. Nordstrom, 3855 Paseo de las Tortugas, Torrance, Calif. 90505

Filed Dec. 12, 1980, Ser. No. 216,065
Int. Cl.³ H01H 5/18, 3/04
U.S. Cl. 200—67 G **8 Claims**



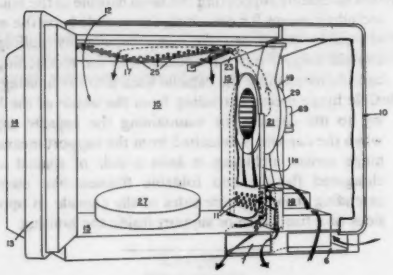
1. An electrical toggle switch, comprising:
a switch housing including a mounting portion;
a plurality of spaced electrical switch contacts mounted in said switch housing;
a conductive contact member pivotally mounted in said housing on a first of said switch contacts and movable to either of two opposite pivotal positions to selectively make electrical contact with others of said contacts on opposite sides of said first switch contact;
a switch lever having two operating positions and including a manipulatable portion, a lower end portion operatively coupled to said conductive contact member opposite said first switch contact, and an intermediate pivot operatively coupled to said switch housing, that portion of said lever between said pivot and said lower end portion being resiliently bendable and having two oppositely bowed stable postions and an unstable range of positions intermediate said stable positions, each of said stable positions corresponding to a different one of said switch lever operating positions, the movement of said switch lever from one of said operating positions to the other thereof causing said contact member to move to a different one of said pivotal positions.

4,332,992

AIR FLOW SYSTEM FOR COMBINATION MICROWAVE AND CONVECTION OVEN

Wallace L. Larsen, Marion, and Eliot R. Duncan, Iowa City, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Dec. 19, 1979, Ser. No. 105,084
Int. Cl.[3] H05B 6/64
U.S. Cl. 219—10.55 R 10 Claims



1. An air flow system for a combination microwave and electric convection oven comprising:

a. a cabinet;

b. a plurality of wall members joined to divide the cabinet into an oven cavity and an electrical component compartment;

c. an electrical heater selectively associated with a wall member;

d. a first fan selectively associated with the oven cavity to generate a first movement of air in the oven cavity;

e. means for directing air from the first fan past the electrical heater before contacting food to be heated;

f. a second fan selectively associated with the electrical component compartment to generate a second movement of air in the electrical component compartment;

g. means for selectively diverting the first movement of air from the oven cavity outside the oven and simultaneously diverting the second movement of air inside the oven cavity, which means comprises:

(1) a conduit coupled to the first fan and selectively associated with the oven cavity whereby air from the oven cavity moves down the conduit and enters the first fan;

(2) a movable member associated with the conduit for selectively obstructing the flow of air in the conduit;

(3) means for exhausting the air in the oven cavity outside the oven; and

(4) a portion of the conduit having an aperture therein that is exposed to the electrical component compartment with the movable member obstructs the flow of air in the conduit thereby replacing the exhausted cavity air with air from the electrical component compartment; and

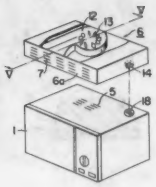
h. means for interconnecting the first fan and the second fan so that both fans are actuated simultaneously from a single motor.

4,332,993

BUILT-IN TYPE MICROWAVE OVEN

Jun Shibahara, and Akira Matsumura, both of Fuji, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Continuation of Ser. No. 69,182, Aug. 24, 1979, abandoned. This application Apr. 30, 1981, Ser. No. 259,366
Claims priority, application Japan, Sep. 2, 1978, 53-121093; Sep. 2, 1978, 53-121094; Oct. 12, 1978, 53-139923; Oct. 12, 1978, 53-139924
Int. Cl.[3] H05B 6/80; A47J 36/38
U.S. Cl. 219—10.55 R 2 Claims



1. A built-in type microwave oven comprising:

a cabinet covering the microwave oven and provided with an opening on the upper surface of said cabinet communicating with said oven, said oven including a magnetron energizing circuit and said cabinet including an electrical socket mounted in said upper surface and connected to said magnetron energizing circuit to receive electrical power therefrom,

an air guide member detachably mounted on said cabinet, said air guide member comprising side panels, front and rear panels, a bottom panel having a lower surface and a top panel and enclosing said opening in the upper surface of said cabinet, said front panel being provided with an outlet opening communicating with atmosphere and with said opening formed on the upper surface of said cabinet, said air guide member conducting oven cooling air heated in said oven to atmosphere and having a longitudinal length substantially equal to that of said cabinet, said air guide member further comprising an electric fan contained therein and positioned above said opening formed through said cabinet, an air passage for guiding air from said fan to said outlet opening of said front panel, and a connecting electrical plug attached to said lower surface of said bottom panel and electrically connected to a driving motor of said fan, said plug being received by said socket mounted on the upper surface of said cabinet to supply electrical power from said socket to said fan driving motor, said fan being electrically connected to said magnetron energizing circuit in the microwave oven through said plug and socket.

4,332,994

APPARATUS FOR RESISTANCE WELDING OF CAN BODIES

Paul Opprecht, Im hinteren Bernold, 8962 Bergdietikon, Switzerland

Continuation-in-part of Ser. No. 919,049, Jun. 26, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,038
Claims priority, application Switzerland, Jan. 25, 1978, 767/78
Int. Cl.[3] B23K 11/30, 11/32
U.S. Cl. 219—64 10 Claims

1. An apparatus for the resistance welding of the longitudinal seam of can bodies by means of electrode rollers, comprising:

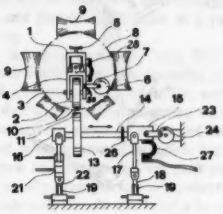
guide means for guiding and overlapping the edges of the can bodies to be welded;

a pair of electrode rollers comprising an upper electrode roller and a lower electrode roller;

said lower electrode roller having a drive shaft;

means for suspending said lower electrode roller together with its drive shaft for movement during the welding operation towards and away from said upper electrode roller in response to variations in the thickness of the can body to be welded;

said suspending means simultaneously also serving to normally bias the lower electrode roller toward the upper electrode roller in order to maintain a substantially constant welding pressure during the welding operation;



means for mounting said lower and upper electrode rollers for movement transversely with respect to the edges to be welded of the can bodies and in the axial direction of said lower and upper electrode rollers; and

said mounting means for said lower and upper electrode rollers enabling transverse movement with respect to the edges to be welded of the can bodies and in the axial direction of the lower and upper electrode rollers during welding of the can bodies.

4,332,995

ELECTRICAL DISCHARGE MACHINE

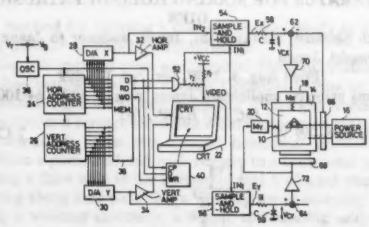
Tetsuro Ito; Toshiro Oizumi, and Shigeo Yamada, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1980, Ser. No. 176,432

Claims priority, application Japan, Aug. 9, 1979, 54/101600; Oct. 11, 1979, 54/131025

Int. Cl.³ B23P *1/02*

U.S. Cl. 219—69 V **10 Claims**



1. An electrical discharge machine for machining a workpiece by applying electric current to said workpiece and an electrode with a machining liquid filling the space between said workpiece and said electrode comprising:

main machining moving means for carrying out main machining movement to machine said workpiece in a main machining direction with said electrode confronting said workpiece;

auxiliary machining moving means for carrying out auxiliary machining movement to machine said workpiece by moving said electrode relative to said workpiece in a plane which crosses said main machining direction;

control means for maintaining a gap between said electrode and said workpiece at a predetermined value; and

display means for detecting an auxiliary machining movement displacement in said plane for displaying said displacement at enlarged scale with the center of said displacement as an origin point.

4,332,996

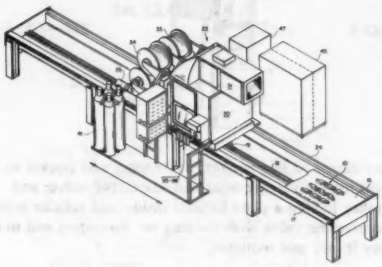
APPARATUS FOR RESURFACING TRACK LINKS FOR CRAWLER-TYPE TRACTORS

Harvey W. Janssen, Lafayette, Calif., assignor to Wolff Manufacturing Co., Burlingame, Calif.

Filed May 7, 1979, Ser. No. 36,657

Int. Cl.³ B23K *9/04*

U.S. Cl. 219—76.14 **7 Claims**



1. Apparatus for resurfacing track links for crawler-type tractors, comprising:

(a) a platform for supporting a track link;

(b) an elongate guide member mounted on the platform for aligning the track link with respect to the platform;

(c) a car mounted on the platform and maneuverable with respect to the platform;

(d) welding means for resurfacing the track link including a welding head attached thereto and means for maneuvering the welding head; and

(e) a carriage supporting the welding means mounted for relative movement on the car, said carriage engages the guide member and is moved by the guide member relative to the car so that the welding head is maintained in alignment with the guide member as the car moves relative to the platform.

4,332,997

APPARATUS FOR DELIVERY OF VALVES AND MELTING RINGS TO AN INDUCTOR HEATER FOR HARD FACING

Daniil A. Dudko, ulitsa Anri Barbjusa, 22/26, kv. 113; Anatoly A. Mozzhukhin, ulitsa Grodnenskaya, 3/5, kv. 37; Vladimir P. Sotchenko, ulitsa P. Tychiny, 13, kv. 210, and Boleslav I. Maximovich, ulitsa Anri Barbjusa, 22/26, kv. 107, all of Kiev, U.S.S.R.

Filed Jul. 15, 1980, Ser. No. 169,172

Int. Cl.³ H05B *6/14;* B23K *37/04*

U.S. Cl. 219—9.5 **4 Claims**

1. An apparatus for delivery of valves and melting rings for internal combustion engines to an inductor heater, for hard facing of said valves by melting said melting rings upon the working surfaces of said valves, comprising:

a vertically installed tubular body arranged under said inductor heater;

first and second gravity feed trays adjoining an upper end of said tubular body for respectively feeding valves and rings to said tubular body;

a stop located under said first tray and positioning a respective valve so that a stem of said respective valve is upwardly directed;

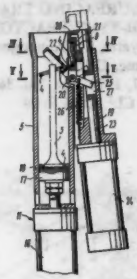
a rotatable pocket receiving a respective work ring and setting it onto said respective valve, said pocket having a rotation axle and being located between said tubular body

and said second tray and having a shelf in a lower part for holding the ring;

an actuating cylinder means to rotate said pocket;

a transmitting link connecting a rod of said actuating cylinder means to said pocket for rotating said pocket to feed said respective ring onto said respective valve; and

a pusher having a plate located inside said tubular body to receive the valve with the ring set thereupon and to convey it into said inductor.

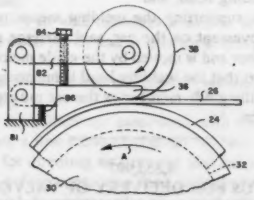


4,332,998

APPARATUS FOR WELDING AUTOMOTIVE BRAKE SHOES

Lawrence A. Boros, Ashtabula, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 28, 1980, Ser. No. 182,050
Int. Cl.³ B23K *11/32, 11/02*
U.S. Cl. 219—107 **1 Claim**



1. An apparatus for welding the edge surfaces of a pair of curved metal brake shoe webs to a substantially flat brake shoe table surface comprising:

means for positioning said brake shoe table in longitudinal alignment with said brake shoe webs with one end portion of said table surface abutting the surface of said brake shoe webs over a predetermined distance with said table surface diverging away from said brake shoe web edge surface forming a vertex where said surfaces abut;

a forge wheel capable of pressing said abutting surfaces together at said vertexes;

means for providing a high frequency alternating potential to said table and said webs to induce current to flow therebetween and thereby heat the interfacing surfaces in the area of said vertexes;

means for rotating said brake shoe table and said brake shoe webs together along a curvelinear path while maintaining said pressure and high frequency alternating potential to melt said interfacing surfaces together; and

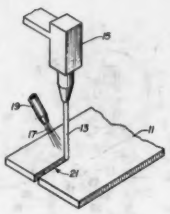
a pair of fingers contacting said brake shoe table for bending said brake shoe table to the curvature of said brake web and holding said brake shoe table in contact with said brake shoe webs as said interfacing surfaces begin to cool.

4,332,999

METHOD FOR MACHINING A WORKPIECE WITH A BEAM OF RADIANT ENERGY ASSISTED BY A CHEMICALLY-REACTIVE GAS

James P. Wittke, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1980, Ser. No. 195,645
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LJ **10 Claims**



1. A method for machining a workpiece including (i) directing a beam of radiant energy upon said workpiece whereby said workpiece absorbs substantial energy of said beam and is thereby heated at the area of incidence with said beam and (ii) providing at least at said area of incidence with said beam, an ambient atmosphere that is chemically reactive with the material of said workpiece whereby a chemical reaction occurs between said atmosphere and workpiece material, characterized in that

(a) said beam is of such power density as to heat said area of incidence to a reaction temperature that is below the melting point of said workpiece material but high enough for said chemical reaction to proceed at a practical rate,

(b) said chemical reaction is exothermic and produces a reaction product having a boiling point that is below said reaction temperature and gaseous when formed,

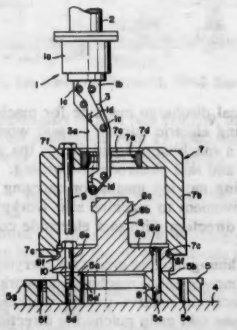
(c) and said radiant energy is of such wavelengths as to produce substantially no reactive dissociation products in said atmosphere.

4,333,000

APPARATUS FOR MAKING HOLLOW EXTRUSION DIES

Akihiko Shimizu, Kawasakishi, Japan, assignor to Japax Inc., Kawasaki, Japan

Filed Aug. 4, 1980, Ser. No. 175,009
Claims priority, application Japan, Aug. 8, 1979, 54-100229
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 W **7 Claims**



1. An apparatus for sequentially making male and female die members for use as a hollow die set, from solid male and female

die blanks, respectively, said die members having their respective male and female bearing surfaces spaced apart from one another in a predetermined shaped and mating relationship, from a solid male and a hollow female die blanks, respectively, said apparatus comprising:

a wire-cut EDM electrode head assembly having a plurality of wire guide members for spanning and axially transporting a continuous wire electrode in a fixed path of generally U form at an end portion of said assembly, said path including a predetermined stretch of the axially transported wire electrode constituting an axially moving EDM wire-cutting edge for said male and female die blanks;

a first jig member for securely and interchangeably mounting said male and female die blanks in a predetermined position thereon;

a worktable for securely mounting said first jig member thereon, said worktable being displaceable relative to said wire-cut EDM electrode head assembly; and

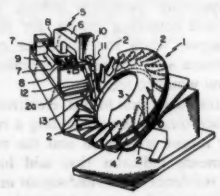
a second jig member for securely mounting on said male die blank when the latter is securely mounted on said first jig member in said predetermined position for providing a reference surface to be engaged by said predetermined stretch of the axially transported wire electrode for machining said male and female die blanks in said predetermined position.

4,333,001

METHOD FOR WELDING AN IMPELLER

Syuhei Nakahama, and Etsu Yamashita, both of Chiba, Japan, assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 72,843, Sep. 6, 1979, Pat. No. 4,296,308.
This application Mar. 27, 1981, Ser. No. 248,418
Claims priority, application Japan, Sep. 6, 1978, 53-109274
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—125.1 **3 Claims**



1. A method for welding a curved impeller blade to a supporting plate of an impeller, comprising:

holding the impeller plate and impeller blade in positions to define between them a V-shaped channel having an apex constituting a weld line including a straight horizontal portion and further including a curved portion extending continuously from the straight horizontal portion and within a plane inclined with respect to a horizontal plane;

placing a filler wire in the bottom of said V-shaped channel;

moving along said weld line a welding torch assembly having a welding electrode, a nozzle surrounding said electrode and in which said electrode is mounted and having a passage for an inert gas, said nozzle having an exterior shape with the opposite sides thereof shaped for contacting the inner surfaces of said V-shaped channel for maintaining a substantially fixed distance between the tip of said electrode and the straight horizontal portion of the apex of said V-shaped channel, the size of the lower portion of said nozzle from the center line thereof to at least one end of the nozzle facing the direction of the length of the apex line being reduced sufficiently to give the nozzle a shape for keeping the space between said electrode and the apex of the channel substantially the same as the spacing in the straight horizontal portion of the apex during movement of said nozzle along the curved portion of the apex by avoiding interference of the nozzle with the inner surface of the V-shaped channel during movement along the curved portion of the apex;

keeping said nozzle in contact with the inner surface of said V-shaped channel during said movement; and

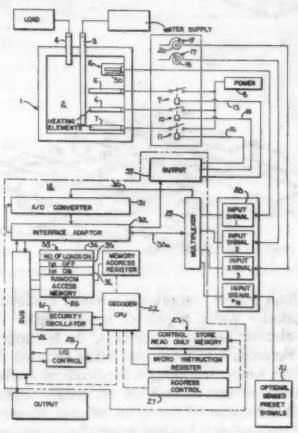
while moving said assembly. operating said assembly to carry out welding while supplying inert gas to said nozzle.

4,333,002

MULTIPLE DEVICE CONTROL APPARATUS

Norman M. Kozak, Greendale, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Sep. 2, 1980, Ser. No. 182,864
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—321 **8 Claims**

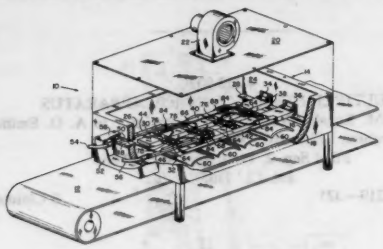


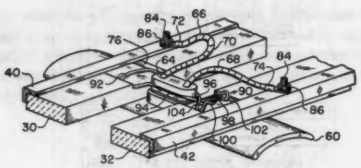
1. A water heater apparatus comprising a water storage tank having a plurality of separate electrical heating means, a plurality of power supply connectors one for each of said heating means, sensor means for sensing the temperature of the water, temperature present means for establishing a signal proportional to a predetermined desired temperature, status means to continuously record the number of heating means in operation, controller logic means for comparing the output of the sensor means and the preset means and the status of said heating means to control the number of activated heating means and to sequentially activate the heating means, said controller logic means being operable to turn on the separate heating means in accordance with the historical operation of said heating means, said sensor means and preset means establish proportional analog signals, said controller logic means includes a microprocessor having a RAM memory including storage locations containing a status number corresponding to the number of energized heating elements and individual status identification of the heating elements last activated and the heating element last deactivated, said microprocessor being operable to cyclically read and digitize said signals of the sensor means and the preset means and establish corresponding data numbers in said RAM memory for the actual temperature and the preset temperature, and said microprocessor being programmed to periodically determine the difference in the stored numbers for the actual temperature and the preset temperature and adding a fixed constant number thereto to generate a control number encoded to the number of elements to be activated for such control number and operable to compare said control number with said status number for generating individual control signals for each of said heating elements.

4,333,003
RADIANT AIRFLOW HEAT PROCESSING ASSEMBLY

Jose I. Rivera, 39-20 55th St., Woodside, N.Y. 11377

Filed Jun. 5, 1980, Ser. No. 156,691
Int. Cl.³ H05B 3/00
U.S. Cl. 219—377 9 Claims





1. A radiant heater comprising a heater enclosure having a pair of opposite walls, a pair of spaced apart substantially parallel dielectric support members, each support member extending between said walls and being secured thereto, first bus bar means supported along a longitudinal surface of one of said support members, second bus bar means supported along a longitudinal surface of the other of said support members, one end of each of said bus bar means being spaced from one wall of said enclosure and the other end extending through the opposite wall thereof so that connection of said bus bar means to a power source can be made outside of said enclosure, a plurality of electrical radiant heating elements each having a pair of electrical leads and front and rear heating surfaces, a plurality of support means, one for each heating element, releasably mounting said radiant heating elements in a spaced relationship along said support members such that the front surfaces thereof are oriented to radiate heat towards an area to be heated, connector means for electrically connecting the leads of said heating elements to said first and said second bus bar means, and blower means for blowing air directly at the leads and rear surfaces of said heating elements and towards the area to be heated whereby the air absorbs heat from the leads and rear surfaces of said heating elements which is transferred to the area to be heated by convection to supplement the radiant heating effect of said heating elements.

4,333,004
DETECTING ICE FORMING WEATHER CONDITIONS

John R. Forgue, Waterbury; Joshua I. Goldberg, Woodbridge, and Leonard Seide, Westport, all of Conn., assignors to Data-products New England, Inc., Wallingford, Conn.

Filed Feb. 19, 1980, Ser. No. 122,757
Int. Cl.³ H05B 1/02
U.S. Cl. 219—497 29 Claims

27. An ice detection apparatus for determining whether weather conditions are ice forming, comprising:

pulse voltage means for supplying a pulse of fixed first voltage when enabled;

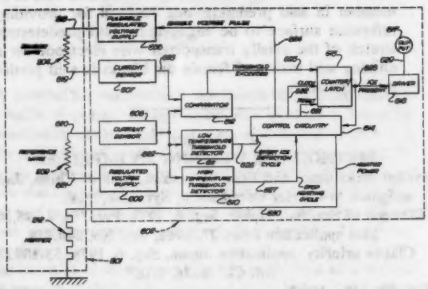
sensor means, directly exposed to said weather conditions and electrically connected to said pulse voltage means, for presenting an electrical resistance in accordance with the temperature of said sensor means;

continuous voltage means for supplying a continuous fixed second voltage;

reference means, exposed to the ambient temperature to which said sensor means is exposed and electrically connected to said continuous voltage means, for presenting an electrical resistance indicative of said ambient temperature;

comparator means, electrically connected to said sensor means and said reference means, for generating an ice-present signal when the resistance of said sensor means during said pulse, when compared to the resistance of said reference means, indicates that ice was in contact with said sensor means during said pulse;

heater means, thermally coupled to said sensor means and reference means, for heating said sensor means and reference means when enabled, to melt ice in contact with said sensor means and reference means;



ambient temperature detection means, electrically connected to said reference means, for generating a start detection signal when the resistance of said reference means indicates said ambient temperature is sufficiently low to allow water to freeze;

high temperature detection means, electrically connected to said reference means, for generating a reset signal when said heater means is enabled and the resistance of said reference means indicates that said heater means has heated said reference means and sensor means to a temperature sufficiently high so as to melt ice in contact with said sensor means; and

control means, receiving said reset signal and said start detection signal, for repetitious spaced enabling of said pulse voltage means while receiving said start detection signal, and for enabling said heater means upon receiving said ice-present signal until receiving said reset signal.

4,333,005
AUTOMATIC CODE READING DEVICES

Shunichi Takamatsu, and Kinshi Maekawa, both of Osaka, Japan, assignors to Itoki Co., Ltd., Osaka, Japan

Filed Nov. 9, 1979, Ser. No. 92,754
Claims priority, application Japan, Nov. 10, 1978, 53-137779; Nov. 10, 1978, 53-137780
Int. Cl.³ G06K 7/015
U.S. Cl. 235—435 32 Claims

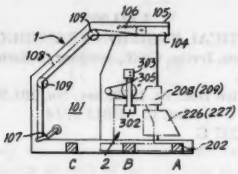
1. An automatic code reading device for reading out a code mark affixed on an axial end surface of an object having a circular section, which comprises:

a housing defining a chamber in which the object should be loaded;

means for stationarily holding the object within said chamber;

means for reading out the code mark and disposed in said chamber to face the object contained in said chamber; and

means for rotating said reading means around the axis of the object contained in said chamber to scan the code mark on the axial end surface of the object without failure, said rotating means including a shaft rotatably supported through and by said housing, motor means for rotating said shaft and mounted on said housing, a lever arm pivoted on the inner end of said shaft and having said reading means mounted on an end thereof, roller means mounted on said lever arm near said reading means, and tension spring means connected between the other end of said lever arm and said shaft to urge said roller means to the axial end surface of the object contained in said chamber.

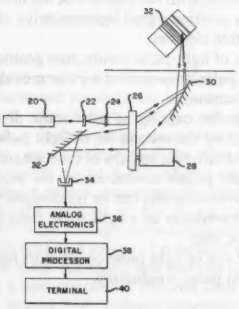


4,333,006

MULTIFOCAL HOLOGRAPHIC SCANNING SYSTEM

Brian A. Gorin, and James A. Hardy, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 12, 1980, Ser. No. 215,903
Int. Cl.³ G06K 7/10
U.S. Cl. 235—457 **11 Claims**



1. An apparatus for scanning an article comprising:

a source of light beam;

a rotating member positioned to receive said light beam;

a plurality of first hologram members located on said rotating member to intercept said light beam, each of said hologram members having a different focal plane for focusing said light beam at a scanning area which overlaps the focal plane of each of the other hologram members adjacent said scanning area through which an article passes;

means located on said rotating member for collecting the light beams reflected from the article and focusing the reflected light beams at a collection point; and

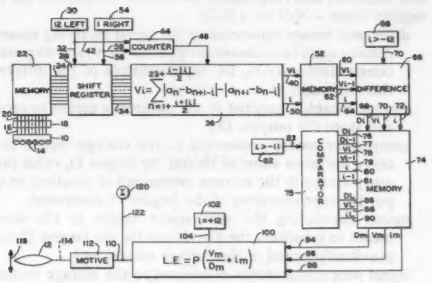
means positioned as the collection point for detecting changes in the light beams reflected from the article.

4,333,007

METHOD AND APPARATUS FOR DETERMINING FOCUS DIRECTION AND AMOUNT

Richard A. Langlais, Littleton; Francis T. Ogawa, Lakewood, and Dennis J. Wilwerding, Littleton, all of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 10, 1980, Ser. No. 168,225
Int. Cl.³ G01J 1/20
U.S. Cl. 250—201 **10 Claims**



1. Apparatus for use with an auto focus system which includes lens means that produces first and second radiation distribution patterns of a scene to be focussed upon, the patterns being similar and in a first relative position when the lens means is in a proper focus position with respect to the scene, the patterns moving away from the first relative position in a first relative direction as the relative position of the scene and the lens means changes from the proper focus position in one direction and the patterns moving away from the first relative position in a second relative direction as the relative position of the scene and the lens means changes from the proper focus position in a direction opposite to the one direction comprising, in combination:

a first plurality of radiation detectors positioned to receive the first radiation distribution pattern, each radiation detector in the first plurality of radiation detectors operable to produce an output indicative of the radiation received thereby;

a second plurality of radiation detectors positioned to receive the second radiation distribution pattern, each radiation detector in the second plurality of radiation detectors operable to produce an output indicative of the radiation received thereby, each radiation detector in the second plurality of radiation detectors having a positionally corresponding radiation detector in the first plurality of radiation detectors so that, when the lens means is in a proper focus position, the output of each radiation detector in the second plurality of radiation detectors is substantially equal to the output of its positionally corresponding radiation detector in the first plurality of radiation detectors;

shift register means connected to receive the outputs of the radiation detectors in the first and second plurality of radiation detectors and operable to shift the outputs of the radiation detectors in one of the plurality of radiation detectors with respect to the outputs of the positionally corresponding radiation detectors in the other of the plurality of radiation detectors;

signal receiving means connected to the shift register means to receive the outputs of the radiation detectors in the first and second plurality of radiation detectors and to produce a plurality of consecutive outputs, V_i, in accordance with the expression

$$V_i = \sum_{n=1+\frac{i+|i|}{2}}^{(N-1)+\frac{i-|i|}{2}} |a_n - b_{n+1-i}| - |a_{n+1} - b_{n-i}|$$

where N is the number of radiation detectors in the first plurality of radiation detectors, n is any number of 1 to N, a represents the output of individual radiation detectors in the first plurality of radiation detectors, b represents the output of individual radiation detectors in the second plurality of radiation detectors and i represents the number of shifts of the shift register from $-N/2$ to $+N/2$;

difference means connected to the signal receiving means to receive each two consecutive values of V_i and to produce consecutive outputs, D_i, representative of the difference therebetween;

storage means connected to the difference means to receive and store the outputs D_i;

comparator means connected to the storage means to receive the latest value of D_i and the largest D_i value previously stored in the storage means and to produce an output D_L representative of the largest D_i compared;

means connecting the comparator means to the storage means to substitute the D_L output for the largest D_i value previously stored in the storage means; and

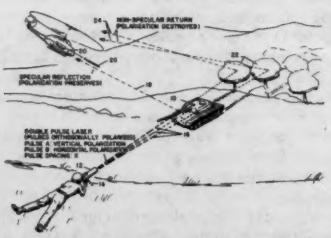
signal processing means connected to the storage means to receive the largest D_L signal, D_m, when $i = +N/2$ and to produce an output, L.E., indicative of $P(V_m/D_m + i_m)$ where P is a constant proportional to the distance between radiation detectors in the first and second plurality of radiation detectors, and V_m and i_m are the V_i and i values when the D_L value is equal to D_m.

4,333,008

POLARIZATION CODED DOUBLET LASER DETECTION SYSTEM

Victor A. Misek, Hudson, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 21, 1975, Ser. No. 569,920
Int. Cl.³ G02F 1/01; G01J 4/00
U.S. Cl. 250—225 **9 Claims**



1. A system for determining the presence of a specularly reflecting object surrounded by non-specularly reflecting objects comprising in combination:

means for projecting a pulse of polarized electromagnetic energy to a predetermined sector of space;

means responsive to electromagnetic energy of one polarization which has been reflected by objects at said sector of space as a result of illumination by said pulse for producing a first output signal;

means responsive to electromagnetic energy of a polarization different from said one polarization which has been reflected by objects at said sector of space as a result of illumination by said pulse for producing a second output signal, said first and second output signals being equal for randomly polarized electromagnetic energy; and,

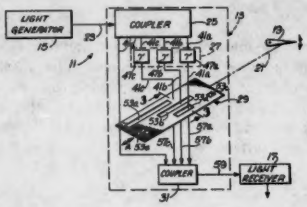
means for subtracting said first output signal from said second output signal to produce a third output signal, whereby the production of said third output signal indicates the presence of energy from a specularly reflecting object.

4,333,009

OPTICAL POSITION TRANSDUCER

Curtis E. Stevens, Irvine, Calif., assignor to Bertea Corporation, Irvine, Calif.

Filed Dec. 10, 1979, Ser. No. 101,586
Int. Cl.³ H01J 3/14
U.S. Cl. 250—237 G **22 Claims**



1. An optical position transducer adapted to receive an input light pulse comprising:

means responsive to the input light pulse for providing a plurality of light pulses;

a movable element having light transmitting regions and light obstructing regions defining a position code;

a first set of light pulse conductors for conducting at least a first set of the light pulses to a first set of locations closely adjacent the movable element whereby the first set of pulses is transmitted or obstructed by the movable element in accordance with the position of the movable element to provide a position signal representative of the position of the movable element;

a second set of light pulse conductors positioned to conduct the light pulses transmitted by the movable element to a second location;

delay means for causing at least some of the light pulses conducted by the second set of light pulse conductors to be delayed different lengths of time whereby at least some of the light pulses conducted by the second plurality of light pulse conductors can be transmitted from the optical position transducer as a light pulse train on a single light conductor; and

each of said sets of light pulse conductors including a plurality of light pulse conductors.

4,333,010

DOSE CALIBRATOR LINEARITY EVALUATION

William H. Miller, 4245 Wooster Rd., Fairview Park, Ohio 44126

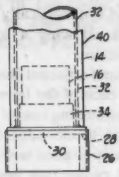
Filed May 8, 1981, Ser. No. 261,748
Int. Cl.³ G01D 18/00
U.S. Cl. 250—252 **11 Claims**

1. A test method for evaluating response of a dose calibrator for measuring the amount of radiation produced by a radioactive source subject to decay, said method comprising the steps of:

(a) disposing the source for continuous measurement by the dose calibrator during the test;

(b) simulating different amounts of source decay by succes-

sively differingly and incompletely shielding the source during a single test;



(c) monitoring the response of the dose calibrator to the shielded source at each of the differing shieldings, and
(d) comparing said monitored responses.

4,333,011

X-RAY GENERATOR FOR FAST DOSE RATE CONTROL

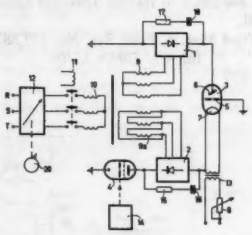
Heinz Mester, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1980, Ser. No. 145,646

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917636

Int. Cl.³ H05G *1/30*

U.S. Cl. 250—409 **9 Claims**



1. An X-ray generator comprising an X-ray tube including an anode, a cathode and an electrode between the anode and cathode, first and second high voltage generators each of which comprises a high voltage transformer winding and rectifying means, means connecting the first high voltage generator to the anode of the X-ray tube to supply thereto a positive high voltage, means connecting the second high voltage generator to the cathode of the X-ray tube to supply thereto a negative high voltage, means connecting said electrode of the X-ray tube to a source of reference voltage which is intermediate in value the anode and cathode voltages of the X-ray tube, and a grid-controlled electron tube connected in series with the second high voltage generator and with its cathode connected to the source of reference voltage whereby a change in the grid voltage of the electron tube produces a simultaneous change in the X-ray tube voltage and current and in the same sense.

4,333,012

AUTOMATIC BLACKENING DEGREE ADJUSTMENT SYSTEM

Shuhei Furuichi, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation of Ser. No. 728,059, Jul. 26, 1978, abandoned. This application Sep. 23, 1980, Ser. No. 189,755

Claims priority, application Japan, Jul. 30, 1977, 52-091795

Int. Cl.³ H05G *1/32*

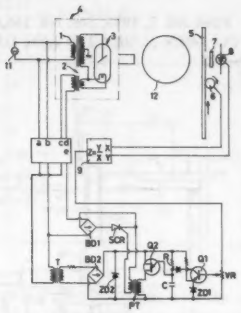
U.S. Cl. 250—409 **1 Claim**

1. An automatic blackening degree adjustment system in an X-ray machine of the type including a source of X-rays which generates an X-ray beam, X-ray film provided opposite the X-ray source, a means for moving the X-ray film relative to the X-ray beam and an X-ray sensor behind the X-ray film, which comprises the steps of:

converting an X-ray intensity into a first electrical signal output;

measuring and converting a relative feed velocity of said X-ray film relative to said X-ray into a second electrical signal output;

feeding said first and second electrical signal outputs to a divider;



converting a quotient of said divider resulting from a division of said first signal by said second signal into a third electrical signal;

feeding said third electrical signal into a comparator and feeding back an output signal from said comparator to a filament control circuit of said X-raying machine thereby controlling filament current of said X-ray machine whereby a tube voltage of an X-ray tube is kept constant for photographing intervals such that exposure is adjusted to an optimum amount while the X-ray wavelength is kept constant and resulting in X-ray photographs which have sufficient and uniform contrast in all part thereof.

4,333,013

EVALUATION INSTRUMENT FOR PHOSPHATE GLASS DOSIMETER

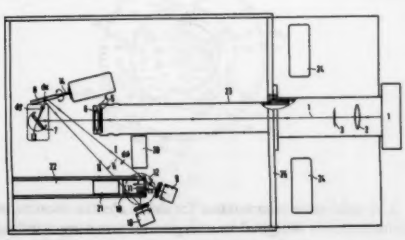
Bertram Burgkhardt; Winfried König, both of Karlsruhe; Ernst Piesch, Eggenstein-Leopoldshafen, and Hans G. Röber, Karlsruhe, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,653

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922644

Int. Cl.³ G01N *21/64*

U.S. Cl. 250—461 R **10 Claims**



1. In a device for evaluating the state of a phosphate glass

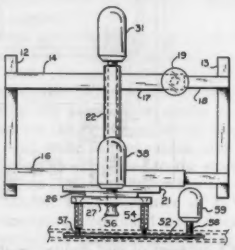
dosimeter by effecting differential scanning of the dosimeter glass with light radiation, the improvement comprising: means for holding the glass stationary; means supplying a single beam of light for effecting the evaluation; and scanning means composed of an element defining a pivotal, elongated slit, two rotatable mirrors and two stationary mirrors arranged in the path of the single beam and operable for causing the beam to scan the glass selectively along any one of three coordinates.

4,333,014

CROSSTABLE X-RAY CASSETTE HOLDER

Governor K. Renshaw, 14448 Merced St., San Leandro, Calif. 94579

Filed Jul. 7, 1980, Ser. No. 166,609
Int. Cl.³ G01N *21/01*; G11B *1/00*; G12B *9/00*
U.S. Cl. 250—521 **6 Claims**



1. An adjustable cross table X-ray film holder comprising movable end clamping means for engaging the ends of X-ray film in a cassette or the like

a pivot plate carrying said clamping means and pivotally engaging a link extending rearwardly of said clamping means,

a mounting plate having a depending foot adapted to slidably engage a track along a side of an X-ray table for supporting the holder, and

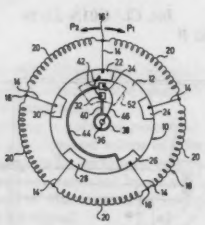
a pivot pin connecting said link and mounting plate with means for fixing the angular relationship of link and mounting plate.

4,333,015

SOLID-STATE COMMUTATOR FOR USE IN ELECTRIC MOTORS

Fritz Faulhaber, CH-6981 Vernate, Tessin, Switzerland

Filed Apr. 3, 1980, Ser. No. 136,967
Claims priority, application Austria, Apr. 17, 1979, 2822/79
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **11 Claims**



1. A solid-state commutator for use in electric motors, which commutator is designed to energize an armature winding disposed on a rotor by connecting coil sections of the winding across a source, when the winding includes N like individual coil sections connected together end to end at N junction points in order to form a ring, N being an integer greater than two, comprising:

a planar disc with a circular periphery and a center, the disc being rotatable about its center in its own plane;

two contacts located symmetrically about the center of the disc, the contacts allowing a source to be connected across the commutator;

N like terminals located adjacent the periphery of the disc at regular intervals, each of the terminals being connectable to a radially corresponding one of the junction points; and

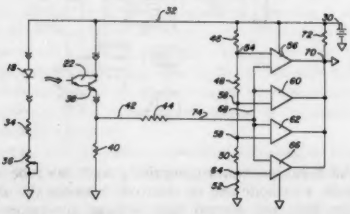
N like light-actuated semiconductor switches, each such switch being radially aligned with a corresponding one of the terminals and connecting said corresponding one to one of the contacts and connecting another of the terminals to another one of the contacts when the switch is closed by light impinging upon it, and isolating said terminals from said contacts in the absence of light impinging upon it.

4,333,016

LIQUID PRESENCE DETECTOR

Arnold C. Bilstad, Deerfield, and Richard I. Brown, Northbrook, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 6, 1980, Ser. No. 127,553
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—577 **5 Claims**



1. A liquid presence detector for detecting the absence of fluid in a fluid chamber, comprising:

a radiation source positioned outside the chamber for transmitting radiation through the chamber, the magnitude of radiation transmitted through the chamber being dependent on the presence of fluid therein;

a radiation detector for receiving radiation transmitted through the chamber and producing an output signal having a level dependent on the magnitude thereof,

said detector output signal having a normal operating range extending from a predetermined maximum signal level to a predetermined minimum signal level;

first comparison means for comparing the detector output signal level with a first reference signal level to develop an output when said output signal level exceeds a first predetermined threshold level between said maximum and minimum detector output levels;

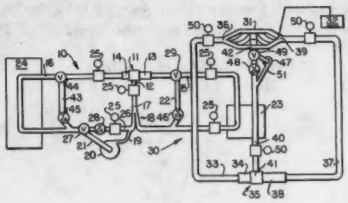
second comparison means for comparing the detector output signal level with a second reference signal level to develop an output when said output level exceeds a second predetermined threshold level above said maximum signal level; and

output circuit means responsive to outputs from either said first or second comparison means for providing an alarm output signal.

4,333,017
METHOD AND APPARATUS FOR CLOSED LOOP VORTEX OPERATION

John J. O'Connell, Box 10, Los Gatos, Calif. 95030

Filed Oct. 20, 1980, Ser. No. 198,476
Int. Cl.[3] F25B 9/02
U.S. Cl. 290—2 37 Claims



1. A method of generating electricity by using a closed loop vortex tube system comprising:

moving a stream of working fluid at a selected temperature to the inlet port of a vortex tube having a hot outlet port for emitting a hot output working fluid and a cold outlet port for emitting a cold output working fluid,

heat exchanging said hot output working fluid with electric generating means to draw off the heat acquired by said working fluid upon passing through the vortex tube, and generating electricity therewith,

heat exchanging said cold output working fluid with a fluid which is warm relative to said cold output working fluid for regaining an amount of heat energy comparable to the heat exchanged with said electric generating means,

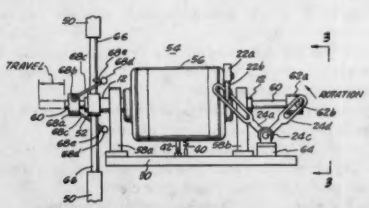
combining said heat exchanged cold output working fluid and said heat exchanged hot output working fluid, and

moving the combined stream to the inlet port of said vortex tube.

4,333,018
WIND ENERGY CONVERSION SYSTEM WITH REACTION TORQUE FOR POWER CONTROL

Gerald W. Bottrell, La Crescenta, Calif., assignor to Ventus Energy Corp., Covina, Calif.

Continuation-in-part of Ser. No. 853,395, Nov. 21, 1977, Pat. No. 4,219,308. This application Jul. 9, 1980, Ser. No. 167,043
Int. Cl.[3] F03D 7/04
U.S. Cl. 290—55 20 Claims



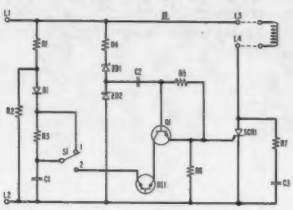
1. A wind energy conversion system comprising:

a wind turbine for converting wind energy into wind turbine torque; an essentially horizontally disposed first shaft, one end of which is drivenly connected to said wind turbine; a first means for reacting to wind turbine torque in such a way that, when said system is in use, wind turbine torque produces, in balance thereto, angular displacement of said first means; a chassis to which said first means is rotatably mounted; a driven machine drivenly connected to said first shaft and supported by said chassis; and a second means for adjusting wind turbine efficiency, said second means being drivenly connected to said first means in such a way that said first means is prevented from having continual angular speed, and further in such a way that angular displacement of said first means causes said second means to adjust wind turbine efficiency.

4,333,019
SILICON CONTROLLED RECTIFIER TRIGGER CIRCUIT

Hans Weigert, 284 Franklin Turnpike, Ridgewood, N.J. 07450

Filed May 7, 1980, Ser. No. 147,471
Int. Cl.[3] H03K 17/72
U.S. Cl. 307—252 N 17 Claims



1. A trigger circuit which is responsive to an input AC voltage for providing at least one drive pulse to a load circuit, said trigger circuit comprising:

switch means having first and second positions, said drive pulse being provided to said load circuit when said switch means is in said second position;

first charge storage means responsive to said input AC voltage when said switch means is in said first position;

first two-terminal switching means conductive when said input AC voltage is greater than a first predetermined value;

second charge storage means responsive to said input AC voltage when said first two-terminal switching means is conductive;

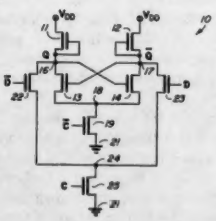
first three-terminal switching means for conduction in response to discharge of said second charge storage means; and

second three-terminal switching means conductive when said first three-terminal switching means is conductive and when said switch means is in said second position, wherein conduction of said second three-terminal switching means passes said pulse to said load circuit.

4,333,020
MOS LATCH CIRCUIT

Heinz B. Maeder, Nyon, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 23, 1979, Ser. No. 41,569
Int. Cl.[3] H03K 3/26, 17/28, 5/18, 3/353
U.S. Cl. 307—279 7 Claims



1. A field effect transistor circuit having a first and a second voltage terminal, and capable of receiving a first and a second

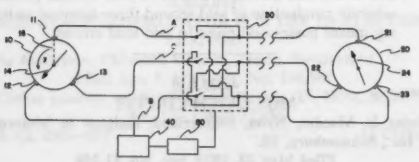
input comprising: a first load transistor coupled between the first voltage terminal and a first node; a second load transistor coupled between the first voltage terminal and a second node; a pair of cross-coupled transistors coupled between a third node and the first and second nodes; a first field effect transistor having a first and a second electrode and a gate electrode, the first electrode being coupled to the third node and the second electrode being coupled to the second voltage terminal, and the gate electrode being for receiving a first clock signal; a second field effect transistor coupled between the first node and a fourth node and having a gate electrode for receiving the first input; a third field effect transistor coupled between the second node and the fourth node and having a gate electrode for receiving the second input; and a fourth field effect transistor coupled between the fourth node and the second voltage terminal and having a gate electrode for receiving a second clock signal.

4,333,021

TRANSIENT STABILITY ENHANCEMENT OF ELECTRIC POWER GENERATING SYSTEMS BY 120-DEGREE PHASE ROTATION

Richard L. Cresap; Carson W. Taylor, and Michael J. Kreipe, all of Portland, Oreg., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 12, 1980, Ser. No. 148,863
Int. Cl.³ H02J *1/00, 3/00*
U.S. Cl. 307—87 **12 Claims**



1. A method for enhancing the transient stability of an electric power generating system having a first set of three-phase generators synchronously turning an intertied second set of three-phase generators at an initial phase connection and an equivalent rotor angle difference, comprising:

a. detecting the imminent loss of synchronism between the two generator sets;

b. disconnecting the intertie between the first and second sets when said imminent loss of synchronism is detected;

c. rotating the phase connections 120 degrees between said first and second sets from said initial phase connection, when said intertie is disconnected, to reduce the equivalent rotor angle difference between the sets by 120 degrees; and

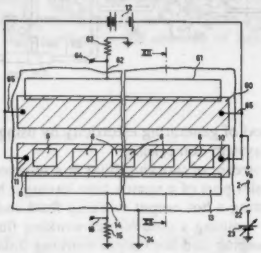
d. reconnecting the two generator sets at said new phase connection.

4,333,022

SEMICONDUCTOR DEVICE FOR DIGITIZING AN ELECTRIC ANALOG SIGNAL

Maurice V. Whelan, Eindhoven, and Claude J. P. F. Le Can, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 909,348, May 25, 1978, abandoned, which is a continuation of Ser. No. 799,718, May 23, 1977, abandoned, which is a continuation of Ser. No. 575,212, May 7, 1975, abandoned. This application Aug. 30, 1979, Ser. No. 71,225
Claims priority, application Netherlands, May 20, 1974, 7406728
Int. Cl.³ H03K *3/353, 13/06;* **H01L** *29/78, 29/04*
U.S. Cl. 307—304 **1 Claim**



1. A semiconductor circuit arrangement having an analog to digital converter, said circuit arrangement comprising:

a body of semiconductive material including a semiconductive region of a first conductivity type adjoining the surface of said body;

a first array of local surface regions of a second conductivity type disposed in said semiconductive region and spaced apart from each other;

a first and a second surface zone of the second conductivity type in said semiconductive region, each provided with an electric connection;

an insulating layer extending at least partially over said semiconductive region;

a first gate electrode, having two ends, insulated from said semiconductive region and extending at least partially over said surface regions of said first array and said first surface zone of the second conductivity type;

a second gate electrode, having two ends, having substantially the same width as the first gate electrode and insulated from said semiconductive region and extending partially over said second surface zone of the second conductivity type;

one end and the other end of said first gate electrode being connected, respectively, to one end and the other end of said second gate electrode;

means for forming an inversion layer in said semiconductive region under each of said gate electrodes;

said inversion layers adjoining the surface of the body and having an extent which can be controlled in a direction substantially parallel to said gate electrodes;

means for electrically charging said surface regions;

input means for supplying an analog signal to be converted to a digital signal to said gate electrodes;

said input analog signal causing a substantially uniform increase or decrease of the gate potential across the whole length of said gate electrodes and thereby a corresponding modulation of the inversion layers, the increases or decreases of the inversion layers under the gate electrodes being substantially equal to each other;

the inversion layer under said first gate electrode electrically connecting each region of said array of surface regions in succession to said first surface zone and at least partly discharging each region of said array of surface regions by

means of the introduction of majority charge carriers of these regions into these regions;

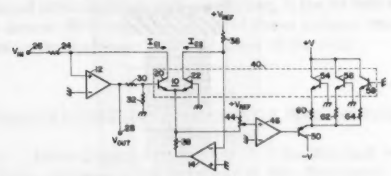
said charge carriers being supplied via the first surface zone and causing an electric pulse on said electric connection of said first surface zone; and

counter means connected to said first and said second surface zones via said electric connections for determining differentially an output signal between said electric connections and for counting the number of pulses in said output signal, said number being determined by the number of surface regions connected by the inversion layer under the first gate to the first surface zone and thereby by the magnitude of said analog input signal.

4,333,023
TEMPERATURE-STABILIZED LOGARITHMIC CONVERTER

Rush W. Hood, Jr., Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 16, 1980, Ser. No. 159,989
Int. Cl.³ H03K *3/26*; G06G *7/24*
U.S. Cl. 307—310 **5 Claims**



1. A temperature-stabilized logarithmic converter circuit, comprising:

an emitter coupled pair of transistors;

first and second operational amplifiers operatively associated with said pair of transistors in such a manner that at least a portion of each transistor forms part of the feedback loop for a respective operational amplifier, whereby a voltage at the output of said first operational amplifier is logarithmically related to a voltage at the input thereof;

means for heating said pair of transistors to a temperature higher than ambient;

means for sensing a change in the junction temperature of one of said pair of transistors; and

heater control means responsive to said sensing means for controlling the power applied to said heating means.

4,333,024
METHOD AND APPARATUS FOR PROCESSING AN ANALOG SIGNAL

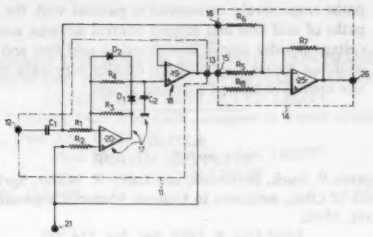
Daniel Maussion, Angers, France, assignor to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France

Filed Oct. 18, 1979, Ser. No. 85,959
Claims priority, application France, Oct. 25, 1978, 78 30399
Int. Cl.³ H03K *5/00, 5/22*
U.S. Cl. 307—351 **3 Claims**

1. A circuit for processing analog signals comprising generating means for generating a variable D.C. voltage and having an input connected to receive the said analog signals and an output for said variable D.C. voltage, said generating means comprising:

(a) a peak voltage following arrangement including a first differential amplifier having an inverting input connected to receive the said analog signals through a first capacitor connected to said generating means input, a noninverting input connected to receive a D.C. reference voltage, and an output, a second capacitor having one of its electrodes connected to a ground potential, a diode connected between the output of said first differential amplifier and the other electrode of said second capacitor to charge the latter, and a discharge circuit for the said second capacitor which, in conjunction with said second capacitor, defines a selected time constant, and

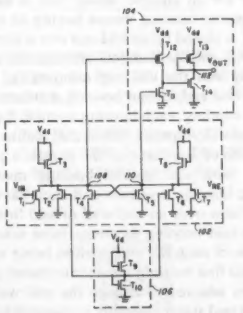
(b) an amplifier having an input connected to said other electrode of said second capacitor and an output connected to said output of said generating means, and voltage summing means having two inputs, one of which is connected to receive the said analog signals through said first capacitor and the other of which is connected to the output of said generating means, and an output for delivering a succession of steep-sided pulses responsive to analog signals applied to said circuit.



4,333,025
N-CHANNEL MOS COMPARATOR

John C. Domogalla, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 13, 1978, Ser. No. 886,191
Int. Cl.³ H03K *5/24*
U.S. Cl. 307—355 **1 Claim**



1. A voltage comparator circuit comprising:

first and second control devices each having a current path and a control electrode,

first and second input terminals to which first and second voltages to be compared with one another are respectively applied; means connecting said input terminals to said control electrodes of said first and second control devices, respectively;

first and second sourcing means each connected in parallel to the current path of a respective one of said first and second control devices, said sourcing means providing current sources;

first and second outputs defined at one end of said current paths of said control devices and providing a differential voltage of said first and second voltages;

a single ended output circuit having first and second inputs connected to said first and second outputs for receiving

said differential voltage, said output circuit providing an output voltage representative of which of said first or second voltages has the larger magnitude;

feedback means comprising a pair of cross-coupled MOS transistors each sized for a magnitude of gain of about unity to provide a magnitude of differential gain of about infinity, said MOS transistors including source-to-drain paths respectively connected in parallel with the current paths of said first and second control devices; and

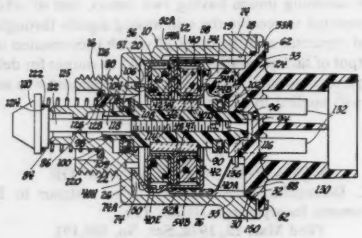
a voltage divider circuit connected to said first and second sourcing means, said voltage divider supplying the voltage operative of said sourcing means.

4,333,026

STEPPING MOTOR

Gustavus P. Bock, Bellbrook, and Larry R. Miller, Springfield, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 8, 1980, Ser. No. 214,200
Int. Cl.³ H02K *5/00*
U.S. Cl. 310—42 **6 Claims**



1. A stator for an electric motor that is assembled to the interior of a motor housing means having an end wall and an open end that is closed by an end cap and wherein after assembly the stator is axially clamped between the end wall of the motor housing and the end cap comprising, housing means comprised of first and second housing members that contain at least one coil winding, each housing member having a plurality of circumferentially spaced poles that define a bore that is adapted to receive the rotor of the motor, a plurality of first tabs integral with said second housing member extending axially of said housing members and each having an end portion partially bent over an end wall of said first housing member to secure said housing members from axial separation, at least a portion of each tab end portion being spaced from the end wall of said first housing member to thereby form bendable resilient means adapted to engage the end wall of the motor housing when said stator assembly is clamped between said end wall of said motor housing and said end cap, and a plurality of second tabs extending axially of said first housing member adapted to be received in corresponding recesses formed in said end wall of said motor housing to fix the stator from radial movement relative to the motor housing.

4,333,027

GAS-COOLED ROTOR FOR TURBO-GENERATOR

Kristian D. Madsen, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Continuation of Ser. No. 964,395, Nov. 29, 1978, abandoned. This application Jan. 30, 1981, Ser. No. 229,919
Claims priority, application Sweden, Nov. 30, 1977, 7713540
Int. Cl.³ H02K *1/32*
U.S. Cl. 310—61 **13 Claims**

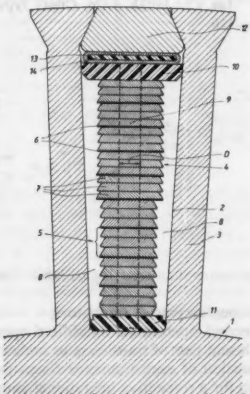
1. An improved gas-cooled rotor assembly employed in a turbo-generator or the like, and comprising:

a rotor core including at least one pair of spaced wall portions defining a winding slot therebetween with a metallic slot wedge extending between said spaced wall portions;

a coil side positioned within said winding slot, said coil side comprising a plurality of conductor portions stacked one upon the other with adjacent planar faces extending perpendicular to an axial plane passing through the winding slot, each pair of adjacent planar faces having an intermediate layer of coil insulation;

said coil side further including opposite side portions spaced from said wall portions of said winding slot, thereby creating axially extending cooling passageways betweem said coil side and the side walls of said winding slot;

radially aligned apertures extending through said conductor portions and said layers of coil insulation extending between said conductor portions, said apertures disposed for receiving a pin-shaped locking member therethrough to prevent tangential separation of said conductor portions from one another;



first and second positioning devices each including insulating material and positioned adjacent to radially outermost and radially innermost conductor portions of said coil side, each of said positioning devices extending beyond opposite sides of said coil side into pressure transmitting engagement with the wall portions of said winding slot for transmitting tangentially directed forces between the wall portions and said coil side;

a metallic pressure bar formed of a solidified pressure medium disposed in said winding slot between said first positioning device and said metallic slot wedge for maintaining sufficient radial pressure against said coil side so as to prevent movements of said conductor portions in a radial direction;

whereby electrical insulation dimensioned to endure the potential difference between the rotor winding and rotor core is applied to less than 70 percent of the total surface area of said coil side.

4,333,028

DAMPED ACOUSTIC TRANSDUCERS WITH PIEZOELECTRIC DRIVERS

Stanley Panton, Peterborough, Canada, assignor to Milltronics Ltd., Peterborough, Canada

Continuation-in-part of Ser. No. 142,014, Apr. 21, 1980. This application Mar. 13, 1981, Ser. No. 243,490
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—326 **25 Claims**

1. A broadly tuned directional transducer system comprising a plate having a radiating surface and a higher flexural mode resonance at substantially the operating frequency of the system, and a transducer element of much smaller effective area

than the radiating surface of the plate and connected thereto for excitation or response to said higher flexural mode resonance, wherein at least alternate antinodal zones of the radiating surfaces of the plate are coupled to a gaseous propagation medium by coupling means formed of low-loss acoustic propagation material of much lower acoustic impedance than the

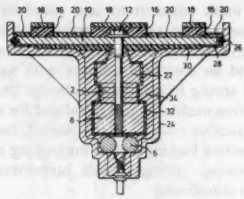


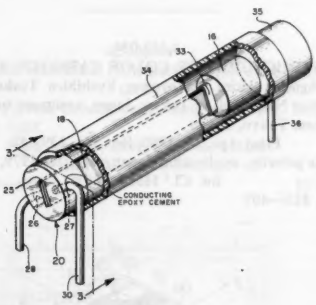
plate and applied at least to said alternate antinodal zones of the radiating surface thereof in a thickness selected to differentiate at least one of the relative phase and the relative amplitude of the radiation from adjacent antinodal zones sufficiently to reduced substantially mutual cancellation, in the far field and in the desired direction of radiation, of sound radiated into said medium from adjacent antinodal zones of the plate.

4,333,029

PIEZOELECTRIC SEISMIC SENSOR FOR INTRUSION DETECTION

Eric A. Kolm, Brookline, and Henry H. Kolm, Wayland, both of Mass., assignors to Baker Industries, Inc., Parsippany, N.J.

Filed Sep. 4, 1979, Ser. No. 72,537
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—329 **10 Claims**



1. A seismic sensor assembly for use in an intrusion detection system, comprising:

a base member;

a cantilever member, comprising a composite flexure member affixed to, and extending substantially perpendicular from, the base member, which flexure member includes a metal shim having upper and lower surfaces, a first piezoelectric ceramic element affixed to the shim upper surface, and a second piezoelectric ceramic element affixed to the shim lower surface, in which said base member defines a slot for receiving the cantilever member, and said base member further defines a pair of opposed holes extending from the surface of the base member to the slot;

a mass, attached to the cantilever member at the end remote from the base member to provide a mass-loaded, piezoelectric cantilever member, for movement when subjected to vibration to bend the cantilever member and produce an output voltage from the piezoelectric ceramic elements which is a function of the mass displacement;

a pair of electrical conductors, each of which extends through one of said holes; and

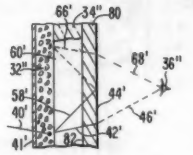
a pair of wire leads, one of which is inserted in each of said holes prior to insertion of the electrical conductor, to enhance the electrical conductivity between the electrical conductor and the surface of the cantilever member received in the slot.

4,333,030

IMAGE CONVERTER TUBE WITH CONTRAST ENHANCING FILTER WHICH PARTIALLY ABSORBS INTERNALLY REFLECTED LIGHT

Louis T. Zitelli, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 17, 1980, Ser. No. 130,877
Int. Cl.³ H01J *40/00*
U.S. Cl. 313—94 **12 Claims**



1. An image converter tube comprising an output phosphor screen for generating fluorescent visible light,

a substantially transparent vacuum window for viewing said output screen, and

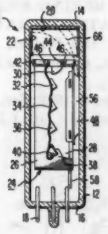
filter means having substantially lower optical transmission than said window regarding said fluorescent visible light, said filter means being in optical contact with the surface of said window facing away from said screen.

4,333,031

PHOTOMULTIPLIER TUBE HAVING DIRECTIONAL ALKALI METAL VAPOR EVAPORATION MEANS

Gilbert N. Butterwick, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 25,559, Mar. 30, 1979. This application Mar. 4, 1981, Ser. No. 240,419
Int. Cl.³ H01J *40/16, 40/02*
U.S. Cl. 313—95 **7 Claims**



1. In a photomultiplier tube of the type comprising: an evacuated envelope, said envelope having a faceplate portion with an inner and an outer surface,

a photoemissive cathode deposited on the inner surface of the faceplate portion of said envelope,

a dynode assembly including a plurality of dynodes arranged to emit secondary electrons in response to electrons emitted from said cathode and an anode for collecting said secondarily emitted electrons, and

an alkali metal vapor source for vapor depositing an alkali

metal on said inner surface of said faceplate thereby forming said cathode, wherein the improvement comprises:

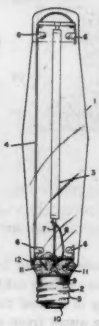
a generator enclosing said alkali metal vapor source, said vapor source consisting of a resistively heated metal holder including therein an alkali metal powder, said generator including means for trapping particles of said alkali metal powder and means for directing the alkali metal evaporation substantially toward said inner surface of said faceplate thereby preventing the uncontrolled evaporation of alkali metal onto said dynode assembly.

4,333,032

HIGH PRESSURE SODIUM LAMP CONTAINING BARIUM GETTER

Elliot F. Wyner, Peabody; John J. Gutta, Salem, both of Mass., and Richard A. Parrott, Merrimack, N.H., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 25, 1978, Ser. No. 945,671
Int. Cl.³ H01J *19/70, 61/24*
U.S. Cl. 313—181 **7 Claims**



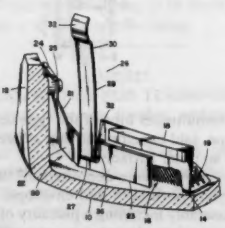
1. A high pressure sodium arc discharge lamp comprising: an elongated arc tube disposed within an evacuated outer jacket, the arc tube containing a fill including sodium and mercury; one or more flash type barium getters disposed within said jacket; a barium film disposed on the inner wall of the jacket and longitudinally spaced more than 1 centimeter from the arc tube, the barium film comprising a visible barium deposit and an invisible barium splash.

4,333,033

ANODE CONTACT SPRING AND METHOD THEREOF FOR COLOR CATHODE RAY PICTURE TUBES

Lowell A. Cordingley, Des Plaines, and Lester C. Gutschick, Deerfield, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 4, 1980, Ser. No. 127,161
Int. Cl.³ H01J *29/07*
U.S. Cl. 313—407 **9 Claims**



1. An anode contact spring for use in a color cathode ray tube having a glass envelope including a substantially rectangular face panel with a flange conjoined to a funnel having an electrically conductive coating chargeable to a high potential deposited on the inner surface thereof, said panel having an electron-excitable picture imaging screen applied to an inner surface thereof, and an electrically conductive coating disposed on the back of said screen, said tube further including a shadow mask having at least one supportive member for suspending said mask adjacent to said panel by spring means attached at one end to said supportive member, and at the opposite end to an electrically conductive pin extending from said flange and an electrical contact with said screen, said anode contact spring having an attachment end for attaching to said supportive member and a distal end for making contact with said conductive coating of said funnel, the improvement comprising positive locking means for locking said attachment end of said contact spring to said supportive member, the locking means comprising:

bolt means extending from said supportive member and located in a preselected position on said member;

clasping means on said attachment end for clasping said supportive member, one leg of said clasping means being a hasp for engaging said bolt;

an anti-twistoff fold in said contact spring and adjacent to said attachment end;

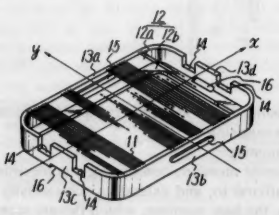
such that upon engagement by manual pressure of said clasping means with said supportive member, said clasping means expands to provide engagement of said hasp with said bolt, then contracts to provide push-click positive locking of said contact spring to said member, and such that said anti-twistoff fold allows for substantial deflection of said contact spring without twisting off and unlocking said clasping means, and the preselected locating of said bolt provides for the precise lateral positioning of said anode contact spring with respect to said shadow mask and said funnel.

4,333,034

GRID STRUCTURE FOR COLOR CATHODE RAY TUBE

Akio Ohgoshi; Akira Nakayama; Yoshihiro Tsukamura, and Takehisa Natori, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,642
Claims priority, application Japan, Apr. 18, 1979, 54/47486
Int. Cl.³ H01J *29/06*
U.S. Cl. 313—407 **11 Claims**



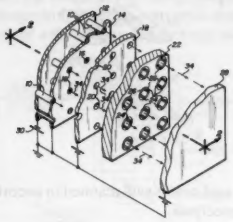
1. A grid structure for a color cathode ray tube comprising a substantially rectangular frame consisting of a pair of first opposed frame portions and a pair of second opposed frame portions orthogonally related to said first frame portions and being integral with the latter at ends thereof, and grid elements secured to said first frame portions and extending therebetween generally parallel to said second frame portions in a longitudinally stressed condition, said second frame portions having recesses therein for enhancing the resilient bending thereof under loads applied to said first frame portions in directions urging the latter toward each other.

4,333,035

AREAL ARRAY OF TUBULAR ELECTRON SOURCES

Donald L. Parker; Wilbur A. Porter, and Robert C. Rogers, all of College Station, Tex., assignors to Woodland International Corporation, Panama, Panama

Filed May 1, 1979, Ser. No. 34,984
Int. Cl.[3] H01J 29/46, 29/70
U.S. Cl. 313—411 16 Claims



1. A structure for generating multiple electron beams comprising in combination:

(a) a plurality of hollow tubular electron emitter units aligned with parallel axes, each of said units closed at one end and open at the opposite end thereof,

(b) means for causing heating current to flow along the length of said tubular units for heating said units to produce thermionic electron emission inside said units, and

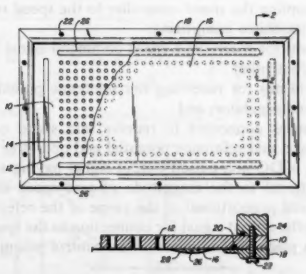
(c) means for directing said electrons from the interior of said units to produce collimated beams of electrons axially from said open ends of said units.

4,333,036

ANODE FOIL HOLDER FOR BROAD BEAM ELECTRON GUN

Sherman R. Farrell, Orinda, Calif., assignor to RPC Industries, Hayward, Calif.

Filed Apr. 28, 1980, Ser. No. 144,244
Int. Cl.[3] H01J 33/04
U.S. Cl. 313—420 11 Claims



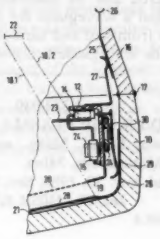
1. An improved foil support for a particle accelerator of the type having an evacuated housing with a multi-apertured window in one wall thereof through which particles are projected and a particle transparent foil covering the window apertures from outside of the housing and which is sealed to the one wall of the housing against the ambient air pressure, wherein the improvement comprises means for pulling a portion of the foil away from the one wall of the housing against the force of the ambient air pressure whereby the foil is placed in tension.

4,333,037

COLOR-PICTURE TUBE WITH AN ARRANGEMENT TO COMPENSATE FOR MISREGISTER

Wolfram Andre, and Hans Müller, both of Aichwald, Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 25, 1980, Ser. No. 115,571
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903759
Int. Cl.[3] H01J 23/16, 29/80
U.S. Cl. 315—3 10 Claims



1. A color picture tube comprising:

a luminescent screen having an electrically conductive layer,

a shadow mask disposed behind said screen and having a frame,

an anode,

an electron gun system disposed behind said shadow mask for emitting an electron beam, said beam hitting said screen, said shadow mask and said frame, wherein said screen, said shadow mask and said frame are heated,

a first resistor connecting said screen and said anode, said first resistor having a resistance dependent on the temperature of said shadow mask, and

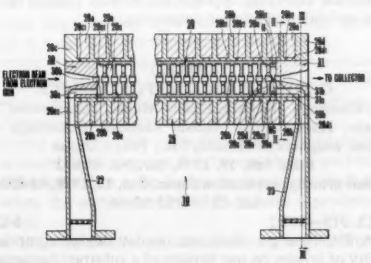
a second resistor connecting said shadow mask and said anode and having a resistance dependent on the temperature of said frame, wherein an electrical field is created between said luminescent screen and said shadow mask.

4,333,038

TRAVELING WAVE TUBE DEVICES

Hisaaki Sato, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Japan

Filed Apr. 7, 1980, Ser. No. 137,799
Int. Cl.[3] H01J 25/34
U.S. Cl. 315—3.5 10 Claims



1. In a traveling wave tube of the type provided with an electron gun, a high frequency circuit unit connected thereto and comprising a cavity resonator type delay circuit unit, a collector unit disposed on the output side of the said high frequency circuit unit and adapted to receive an electron beam sent via said high frequency circuit unit, a beam focusing unit

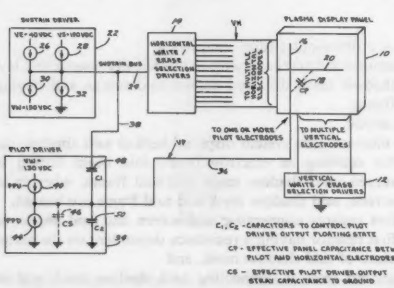
disposed adjacent to said high frequency circuit unit and adapted to cause a periodic magnetic field to act upon the electron beam passing through the high frequency circuit unit, and input/output units connected to the electron gun side of said high frequency circuit unit and the end portion of the collector unit side, a waveguide portion connected to the output unit of said high frequency circuit unit comprises a column-shaped waveguide member having an end surface forming a portion of the wall of a cavity at the end of the high frequency circuit unit, said member being bored with a central aperture at a central axis to allow the passage of the electron beam from the electron gun to the collector unit, said central aperture is tapered and its diameter increases towards the collector unit, and a waveguide for transmitting the electromagnetic waves from said end surface to the output unit, said end surface of the waveguide being shaped like a fan.

4,333,039

PILOT DRIVER FOR PLASMA DISPLAY DEVICE

Richard A. Strom, Eagan, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 20, 1980, Ser. No. 208,738
Int. Cl.³ H05B *41/14*
U.S. Cl. 315—169.4 **9 Claims**


SUSTAIN DRIVER
PLASMA DISPLAY PANEL
HORIZONTAL WRITE / ERASE SELECTION DRIVERS
SUSTAIN BUS
TO ONE OR MORE PILOT ELECTRODES
TO MULTIPLE VERTICAL ELECTRODES
PILOT DRIVER
VERTICAL WRITE / ERASE SELECTION DRIVERS
C1, C2 - CAPACITORS TO CONTROL PILOT DRIVER OUTPUT FLOATING STATE
CP - EFFECTIVE PANEL CAPACITANCE BETWEEN PILOT AND HORIZONTAL ELECTRODES
CS - EFFECTIVE PILOT DRIVER OUTPUT STRAY CAPACITANCE TO GROUND

1. A plasma display pilot cell driver associated with at least one axis of a plasma display device having pilot cells with at least one pilot cell drive electrode comprising:

a pilot cell driver output bus for connection with the pilot cell drive electrode,

a pull-up switch connected with a first source of voltage, and to said pilot cell driver output bus,

a pull-down switch connected with a second source of voltage, and to said pilot cell driver output bus,

means for allowing the output voltage on said pilot cell driver output bus to float with the voltage applied to said pilot cell drive electrodes, and

means for supplying opposite axis sustain voltage feedback to said pilot cell driver output bus.

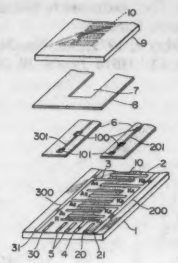
4,333,040

GAS DISCHARGE DISPLAY DEVICE

Yukio Okamoto, Hachioji; Eisuke Mitani, Tokorozawa; Tadao Okabe, Hachioji, and Atsushi Sumioka, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1979, Ser. No. 49,872
Claims priority, application Japan, Jun. 19, 1978, 53-83849[U]
Int. Cl.³ H01J *61/06*
U.S. Cl. 315—169.2 **6 Claims**

1. A DC type gas discharge display device comprising a plurality of anodes on one surface of a substrate juxtaposed in a relationship spaced from each other, a plurality of cathodes disposed between said anodes, opposite to said anodes and in a relationship spaced therefrom so that said anodes and cathodes are alternately arranged on said one surface of said substrate to form a row in which said anodes alternate with said cathodes, first means for multi-phase connecting said anodes along said row, and second means for multi-phase connecting said cathodes along said row, whereby discharge produced between a selected one of said cathodes along said row and a selected one of anodes along said row is self-scanned in accordance with the multi-phase connections.

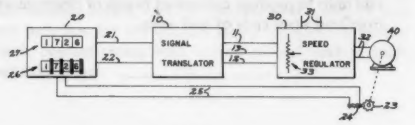


4,333,041

UNIVERSAL SIGNAL TRANSLATOR FOR MOTOR SPEED CONTROL

Donald L. Overland, Minneapolis, and Glen A. Gauvin, Mound, both of Minn., assignors to Detection Sciences, Inc., Minneapolis, Minn.

Filed Apr. 25, 1980, Ser. No. 143,910
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—317 **11 Claims**



1. A signal translator for use in a motor speed control system of the type including a speed controller for generating speed command signals to control the motor at a preselected speed, and a motor speed regulator which provides controlled electrical energization to the motor to control the speed thereof, the speed regulator including a control potentiometer with terminals to which a reference potential is applied, said signal translator for coupling the speed controller to the speed regulator, said signal translator comprising:

input means for receiving a speed command signal from the speed controller;

terminal means for receiving the reference potential from the speed regulator; and

circuit means connected to receive said speed command signal and said reference potential and operative for generating a DC non-pulsed output signal having a voltage proportional to the magnitude of said speed command signal and proportional to the range of the reference potential, the output signal for connection to the speed regulator in place of the output of the control potentiometer.

4,333,042

SYSTEM FOR DRIVING A MOTOR BY A PULSE WIDTH MODULATION INVERTER

Shigeki Kawada, Hino, and Hiroshi Ishida, Hamuramachi, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 27, 1979, Ser. No. 79,500
Claims priority, application Japan, Oct. 6, 1978, 53/122731
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—811 **2 Claims**

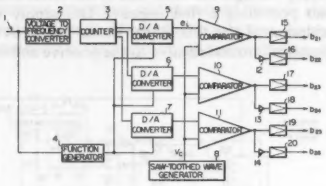
1. A system for driving an AC motor comprising:

A DC power source,

inverter means including a plurality of power transistors connected between said DC power source and said AC motor, for controlling the application of the power from said power source to said AC motor,

a voltage to frequency converter means for receiving an analog voltage input signal which corresponds to a speed command signal for said motor and producing a sequence of pulses which is proportional to said analog voltage input signal,

counter means for frequency dividing coupled to the output of said voltage to frequency converter means, for producing a signal of a frequency for driving said motor,



digital to analog converter means for multiplying the output signal of said counter means by said analog voltage and producing an analog voltage sine wave signal,

a saw-toothed wave generator means for providing a reference saw-toothed voltage which is independent of said analog voltage sine wave signal; and

comparator means coupled to the outputs of said digital to analog converter means and said saw-toothed wave generator means, respectively, for comparing said analog voltage sine wave signal and said reference saw-toothed voltage, wherein the output signals of said comparator means directly control the operation of said plurality of power transistors in said inverter means.

4,333,043

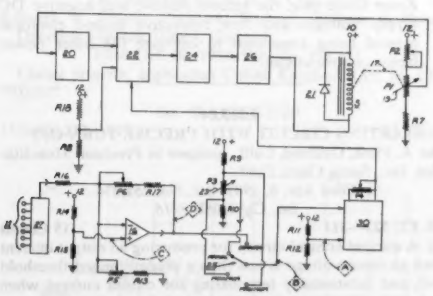
ELECTRICAL CONTROL CIRCUIT FOR CONTROLLING A D.C. SOLENOID

Rudolph E. Six, Roseville, Mich., assignor to Almo Manifold & Tool Co., Center Line, Mich.

Continuation of Ser. No. 889,728, Mar. 24, 1978, abandoned. This application Nov. 7, 1979, Ser. No. 92,214

Int. Cl.³ G05B *7/00*

U.S. Cl. 318—591 **6 Claims**



1. Improvement in an electrical control circuit for controlling a D.C. solenoid having a plunger, a manual control potentiometer, a feedback potentiometer, a comparator for comparing the signal voltages from said potentiometers so that the movement of the plunger of said solenoid is proportional to the movement of the wiper of said manual potentiometer, said feedback potentiometer being controlled by the movement of the plunger of said solenoid, and means for feeding the output signal from said feedback potentiometer to said comparator, said improvement comprising a digital computer control circuit for controlling said solenoid alternately with said manual control, said computer control circuit capable of receiving binary digital input signals and converting them to analog variable signal voltages, switch means for switching between one or the other of said manual and computer controls so that the output signal from either one thereof is fed to said comparator for comparison with the signal from said feedback potentiometer, circuit means in each of the two controls for isolating between ground and a fixed D.C. voltage source the respective output signals so that the respective voltage swings thereof are comparable to each other, means for setting the wiper of the manual potentiometer at a given percentage of its travel while adjusting the input signal to said comparator from said manual control at a predetermined value, means for adjusting the travel position of the plunger of the solenoid and holding it at said given percentage of its travel when the input signal to said comparator is at said predetermined value, and means using said predetermined value of input signal to said comparator for calibrating the computer control against said manual control.

4,333,044

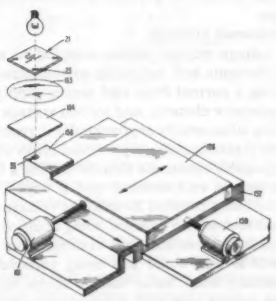
METHODS OF AND SYSTEM FOR ALIGNING A DEVICE WITH A REFERENCE TARGET

Frank H. Blitchington, Richmond, Va., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,730

Int. Cl.³ G05B *21/02*

U.S. Cl. 318—636 **19 Claims**



1. A method of determining the alignment position of a reference target having light reflective and dark areas with respect to a device, which comprises the steps of:

locating at least two spaced light-sensing charge-accumulating elements of the device in general alignment with the target so that an accumulating charge will develop within those elements which are sensing light;

scanning each element a plurality of times to determine the accumulated charge on the element during each scan;

developing a data pulse during each scan for each element when the accumulated charge exceeds a predetermined level;

counting the number of data pulses emanating from each element;

comparing the counts of data pulses from the two elements; and

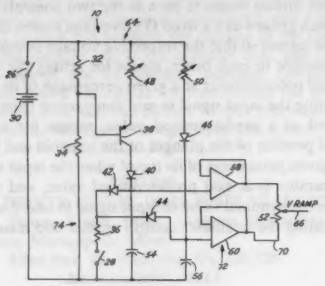
developing a signal in response to the comparison of counted data pulses as a representation of the comparative light sensed by the two elements and the alignment position of the target with respect to the device.

4,333,045

ACCELERATION SHAPING CIRCUIT FOR A STEPPER MOTOR

Norman E. Oltendorf, Algonquin, Ill., assignor to Bodine Electric Company, Chicago, Ill.

Filed Sep. 8, 1980, Ser. No. 185,022
Int. Cl.³ G05B *19/45*
U.S. Cl. 318—696 **10 Claims**



1. An acceleration shaping circuit for a stepper motor, said acceleration shaping circuit providing a variable ramp voltage, comprising, in combination:

a power supply;

source means, couplable to said power supply, for providing a substantially constant current;

first voltage storage means, coupled to said source means, for receiving said substantially constant current, said first voltage storage means charging substantially linearly in response thereto to provide a substantially linear ramp voltage;

a first resistance element;

second voltage storage means, coupled to said first resistance elements and couplable to said power supply, for receiving a current from said power supply through said first resistance element, said second voltage storage means charging substantially exponentially in response thereto to provide a substantially exponential ramp voltage; and

a first adjustable resistance element having a first end terminal, a second end terminal and a wiper, said first end terminal being coupled to said first voltage storage means and said second end terminal being coupled to said second voltage storage means, said variable ramp voltage being available at said wiper and being variable between said substantially linear ramp voltage across said first voltage storage means and said substantially exponential ramp voltage across said second voltage storage means.

4,333,046

POWER FACTOR CONTROL OF A THREE-PHASE INDUCTION MOTOR

Maw H. Lee, Broadview Heights, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Continuation-in-part of Ser. No. 66,523, Aug. 15, 1979, abandoned. This application Mar. 5, 1980, Ser. No. 127,441
Int. Cl.³ H02P *7/18*
U.S. Cl. 323—231 **5 Claims**

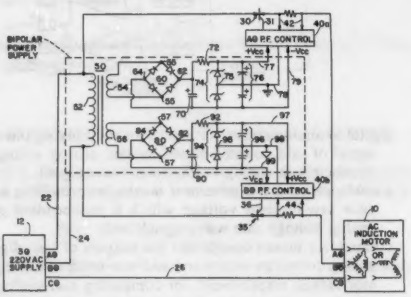
1. In an electronic controller for regulating the power applied by a three-phase AC supply to a three-phase AC induction motor of delta or wye winding configuration, the controller including a pair of power factor control circuits each requiring a positive DC supply voltage, a negative DC supply voltage and an isolated ground, a bipolar supply comprising;

a transformer means having a primary winding connected to sense to a phase-to-phase voltage of the AC supply and a pair of voltage-stepdown secondary windings;

first and second rectifier means each having a DC output and a DC return, and an AC input connected to a respective one of the secondary windings;

first and second capacitor means connected across the DC output and the DC return of a respective one of the first and second rectifier means, the first and second capacitor means filtering the DC outputs of their respective rectifier means to each provide a generally steady state DC voltage;

a first series-connected pair of Zener diodes, the first pair connected to sense at least a portion of the steady DC voltage across the first capacitor means, one end of the series-connected first pair providing a first positive DC supply voltage, the other end of the series-connected first pair providing a first negative DC supply voltage, the midpoint of the first Zener diode pair providing a first electrical ground relative to the positive and negative DC



supply voltages provided by the first Zener diode pair, the first positive and negative DC supply voltages and their respective first electrical ground being connected to energize one of the power factor control circuits; and

a second series-connected pair of Zener diodes, the second pair being connected to sense at least a portion of the DC voltage across the second capacitor means, one end of the series-connected second pair providing a first positive DC supply voltage, the other end of the series-connected second pair providing a second negative DC supply voltage, the midpoint of the second Zener diode pair providing a second electrical ground relative to the positive and negative DC supply voltages provided by the second Zener diode pair, the second positive and negative DC supply voltages and their respective second electrical ground being connected to energize the other power factor control circuit.

4,333,047

STARTING CIRCUIT WITH PRECISE TURN-OFF

John A. Flink, Oakland, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Apr. 6, 1981, Ser. No. 251,374
Int. Cl.³ G05F *3/16*
U.S. Cl. 323—311 **15 Claims**

1. A current control circuit for producing an output current when an input voltage is less than a predetermined threshold level, and substantially terminating the output current when the input voltage exceeds said threshold level, comprising:

a first circuit means responsive to a control voltage differential to transmit an output current when the control voltage differential is less than a predetermined turnoff voltage, and to substantially terminate the output current when the control voltage differential exceeds said turnoff voltage, said first circuit means comprising an FET having a gate, source and drain,

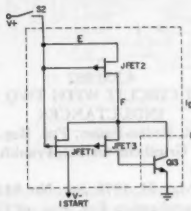
a second circuit means connected to deliver a current for transmission by said first circuit means, said second circuit

means being responsive to said input voltage to establish a control voltage differential for said first circuit means at a level less than the turnoff voltage when said input voltage is less than said threshold level,

a third circuit means having a control terminal and being connected to shunt current from said second circuit means away from the first circuit means, and thereby substantially terminate the transmission of output current by the first circuit means in response to a gating voltage at said control terminal, and

a fourth circuit means connected in circuit with said first, second and third circuit means and responsive to said input voltage exceeding said threshold level to establish

(a) a control voltage differential for said first circuit means substantially at least equal to the turnoff voltage, and



(b) a voltage at the control terminal for said third circuit means sufficient to cause said third circuit means to shunt current away from the first circuit means,

said fourth circuit means comprising an FET having a gate, source and drain, the gates of the first and fourth circuit means being connected together, and the sources of the first and fourth circuit means being connected together to receive the current from the second circuit means,

whereby the current delivered by said second circuit means is transmitted by the first circuit means as an output current of the current control circuit when the input voltage is less than the threshold level, but is shunted away from the first circuit means by the third circuit means when the input voltage exceeds the threshold level.

4,333,048

THYRISTOR CONTROL CIRCUITS

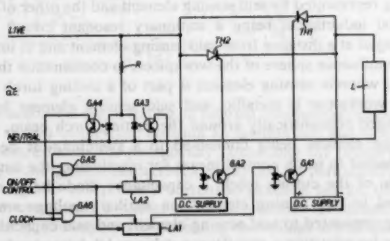
Kenneth W. Bishop, Fareham, England, assignor to Plessey Overseas Limited, Illford, England

Filed Oct. 20, 1980, Ser. No. 198,651

Claims priority, application United Kingdom, Oct. 26, 1979, 7936507

Int. Cl.³ G05F *3/20*

U.S. Cl. 323—319 **5 Claims**



1. A thyristor control circuit arrangement for supplying power from an a.c. supply to a load in accordance with an on/off control signal, said arrangement comprising:

two parallel-connected oppositely-poled thyristors arranged to conduct alternately;

first and second independent d.c. supplies; and

thyristor control means for detecting the polarity of a voltage across the parallel-connected thyristors, and responsive to the on/off control signal for conditioning, from said first independent d.c. supply, one of the thyristors which has a negative voltage across it in readiness for immediate firing thereof as said voltage changes from a negative to a positive voltage, and said thyristor control means being responsive to said on/off control signal after said firing for similarly conditioning the other thyristor for immediate firing.

4,333,049

INRUSH CURRENT MEASURING APPARATUS WITH INSTANTANEOUS POWER INTERRUPTION DEVICE

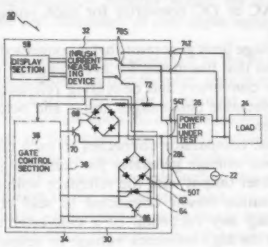
Masatoshi Yui; Minoru Takeoda, both of Tokyo, and Kazuo Otsuka, Komoro, all of Japan, assignors to Takamisawa Cybernetics Co., Ltd., Tokyo, Japan

Filed May 15, 1980, Ser. No. 150,128

Claims priority, application Japan, May 21, 1979, 54-66825[U]; May 21, 1979, 54-66826[U]; May 21, 1979, 54-66827[U]

Int. Cl.³ G01R *19/00, 27/00, 31/00*

U.S. Cl. 324—102 **12 Claims**



1. An inrush current measuring apparatus with an instantaneous power interruption device, comprising an external power input terminal means connecting with a commercial AC supply means, an external power output terminal means connecting with a power unit to be tested, a switching circuit section means functioning to turn on and off the power supply, said switching circuit section means being disposed across a line which connects said external power input terminal means with said external power output terminal means, a gate control section means which controls the open/close timing for said switching circuit section means, a central control circuit means connected via said gate control section means to said switching circuit section, a zero-cross detector section means for detecting zero-cross point in sine waveform of voltage at said external power input terminal means, said zero-cross detector section means being connected to said central control circuit means, a setting section means for setting, on the basis of a zero-cross detection signal from said zero-cross detector section means, an instantaneous power interruption time in instantaneous power interruption mode and a power supply timing in inrush current mode and further an instantaneous power interruption interval in auto mode, said setting section means being connected to said central control circuit means, a current detector section means and a voltage detector section means which detect the current and voltage respectively flowing in said line when said switching circuit section means is opened or closed, both said current detector section means and said voltage detector section means being connected to said central control circuit means, and further a display section means which displays a peak value out of current value signals from said current detector section means, said central control circuit means being further connected to a current monitor terminal

means and to a trigger output terminal means, whereby the electrical behavior on said line resulting from the open/close operation of said switching circuit means can be monitored and output as current or voltage information signals of inrush current mode and instantaneous power interruption mode appearing at said external power output terminal means.

4,333,050

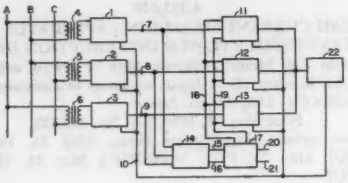
MULTIPHASE VOLTAGE MONITOR

Maynard C. Yeasting, 17967 W. Portage, Elmore, Ohio 43416

Filed Feb. 26, 1980, Ser. No. 124,768

Int. Cl.³ G01R *19/00*; G08B *21/00*; H02H *3/20*

U.S. Cl. 324—107 **7 Claims**



1. A voltage monitor for a multiphase electrical power supply comprising, in combination:

(a) an AC to DC converter for each voltage being monitored,

(b) a voltage limit generator that is connected to the converters and that has means for averaging the voltage outputs of the converters and delivering reference voltages that are selectable percentages above and below the average voltage,

(c) a limit comparator connected to each converter and to the limit voltage generator for comparing the individual converter output with the reference voltages, and

(d) utilization means connected to said comparators for signaling any excursion of a converter output voltage above the high reference voltage or below the low reference voltage.

4,333,051

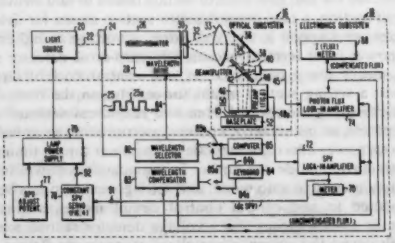
METHOD AND APPARATUS FOR DETERMINING MINORITY CARRIER DIFFUSION LENGTH IN SEMICONDUCTORS

Alvin M. Goodman, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 28, 1980, Ser. No. 153,920

Int. Cl.³ G01R *31/26*

U.S. Cl. 324—158 R **25 Claims**



1. An apparatus for determining the minority carrier diffusion length of a sample of semiconductor material, the sample having two major surfaces, one of the surfaces arranged for illumination and the other surface shielded from illumination comprising:

(a) means for illuminating a portion of the one major surface of the sample with periodically interrupted monochromatic light that is of a selected wavelength;

(b) means for providing a signal representing the surface photovoltage (SPV) on the sample generated in response to chopped monochromatic light;

(c) electronic servo means responsive to said SPV signal for automatically controlling the SPV signal to a substantially constant value; and

(d) means for providing a signal representing the illuminating intensity incident upon the sample.

4,333,052

RESONANT CIRCUIT WITH TWO PARTIAL INDUCTANCES

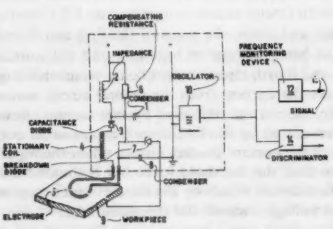
Karl-Heinz Schmall, Baden-Baden, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 31, 1978, Ser. No. 911,282

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1977, 2726648

Int. Cl.³ G01B *7/14*; G01R *33/12*

U.S. Cl. 324—208 **6 Claims**



1. In a control circuit for measuring the distance between a workpiece and a sensing element which is formed as inductance and is part of a resonant circuit as a frequency-determining element whereby the frequency variations of the resonant circuit for producing voltage and/or current changes which are proportional to a distance are connected to a measuring circuit, the improvement being said resonant circuit having at least two partial inductances, one of said partial inductances being represented by said sensing element and the other of said partial inductances being a stationary resonant circuit coil arranged at a distance from said sensing element and in immediate influence sphere of the workpiece, in combination therewith, wherein sensing element is part of a cutting torch and said workpiece is metallic, and said sensing element being arranged concentrically around the cutting torch beam, said sensing element being connected to a switching-off device connected to torch control means for inactivating the cutting action of the cutting torch, a capacitance diode being connected to said sensing element, an auxiliary voltage source being connected to said sensing element and said capacitance diode for adjusting a capacitance value to be determined, and said workpiece being connected to the auxiliary voltage source in such a way that when said sensing element and workpiece touch each other the voltage at the capacitance diode and its capacitance value is variable.

4,333,053

IMAGING SYSTEMS

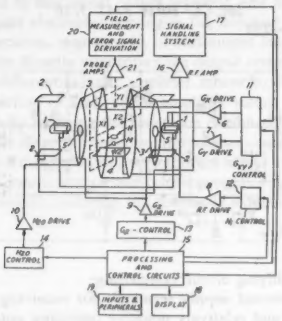
Colin G. Harrison, San Jose, Calif., and Michael Burl, Iver, England, assignors to EMI Limited, Hayes, England

Filed Feb. 28, 1980, Ser. No. 125,495

Claims priority, application United Kingdom, Mar. 13, 1979, 7908734

Int. Cl.[3] G01N *27/00*

U.S. Cl. 324—307 24 Claims



1. A nuclear magnetic resonance apparatus, for examining a substantially planar slice of a body, the apparatus including means for applying magnetic fields to cause resonance preferentially in the plane of said slice, means for applying a pulsed magnetic field having a gradient across the plane of the slice to produce phase dispersion in said resonance, means for sensing resonance signals induced during said pulsed field for a plurality of different directions thereof, means for demodulating the resonance signals and means for further processing the demodulated signals to provide a representation of said slice, wherein the resonance signals are demodulated at a frequency which, in the presence of the said magnetic fields and pulsed magnetic field, is the resonance frequency for a position in the plane lying outside said slice.

4,333,054

APPARATUS FOR USE IN TESTING AN INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

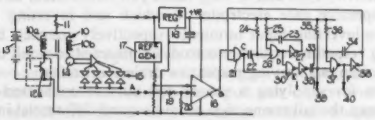
Michael J. Walker, Warley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 21, 1980, Ser. No. 152,122

Claims priority, application United Kingdom, May 25, 1979, 7918386

Int. Cl.[3] F02P *17/00*

U.S. Cl. 324—380 4 Claims



1. Apparatus for use in testing an internal combustion engine ignition system of the type utilizing an ignition coil and electronic switch means for periodically connecting the primary winding of the ignition coil across a supply and for periodically interrupting the coil primary current to produce sparks, the apparatus comprising a voltage comparator means for connection to the ignition system for detecting the voltage across said switch means and indicating when such voltage is in excess of a predetermined value which is an order of magnitude higher than the system voltage and timing means associated with said comparator means and producing an output indicating a satisfactory interruption of coil current only when the output of the comparator means persists in a state indicating that said voltage has been above said predetermined level for less than a predetermined duration.

4,333,055

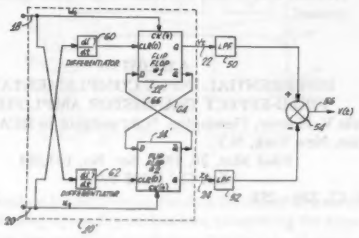
DIGITAL PHASE-FREQUENCY DETECTOR

John E. Crackel, Carson, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Nov. 23, 1979, Ser. No. 97,087

Int. Cl.[3] H03K *5/26*

U.S. Cl. 328—133 18 Claims



1. A digital phase-frequency detector circuit, for detecting differences in phase and frequency of two input signals, said circuit comprising:

two digital memory means, corresponding to the two input signals, each switchable to a first memory state in response to occurrence of a selected feature in its input signal, and to a second memory state upon the occurrence of the same selected feature of the other input signal, whereby any attempt to switch one of said memory means to the first state always results in simultaneously setting the other of said memory means to the second state; and

means for preventing each of said memory means from being set to the first state unless the other of said memory means is in the second state;

whereby only one of said memory means can be in the first state at any time, and the states of said memory means provide an indication of phase and frequency difference between the two input signals.

4,333,056

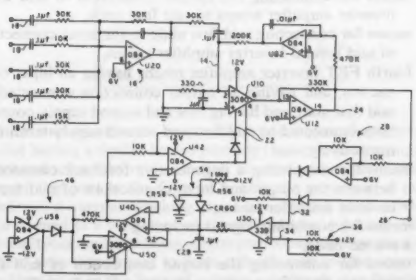
AUTOMATIC GAIN CONTROL CIRCUIT WITH NON-NEGATIVE EXPONENTIAL RELEASE

Ellis K. Cave, Garland, Tex., assignor to Banc-By-Phone Corporation, Bannockburn, Ill.

Filed Apr. 7, 1980, Ser. No. 138,247

Int. Cl.[3] H03G *3/30*

U.S. Cl. 330—129 19 Claims



1. An automatic gain control (AGC) circuit for providing

gain-controlled signal at an output related to signals received at an input, comprising:

gain-controllable amplifier means having an output coupled to the AGC output;

means couplng the AGC input to an input of said amplifier means; and

gain control means responsively coupled to receive signals from within the AGC circuit for automatically determining whether the gain should be increased or decreased, and for controlling said amplifier means with control signals which progressively increase in increasingly larger magnitudes, at least initially, if the gain should be increased, and which decrease if the gain should be decreased.

4,333,057

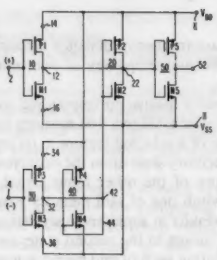
DIFFERENTIAL-INPUT COMPLEMENTARY FIELD-EFFECT TRANSISTOR AMPLIFIER

Merle V. Hoover, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,254

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—253 **24 Claims**



1. An FET amplifying circuit comprising:

first and second input terminals for receiving input signals thereat, and an output terminal;

first and second suppiy terminals for receiving operating potential therebetween;

first, second and third FET inverter amplifier means, each having an input and an output connection and exhibiting transconductance therebetween, and having respective first and second supply connections connected to said first and second supply terminals, respectively;

respective means for connecting said first and second input terminals to the input connections of said first and third inverter amplifier means, respectively;

interconnection means including

a first node,

means for connecting the output connection of said third inverter amplifier means to said first node,

means for connecting said first node to the input connection of said second inverter amplifier means,

fourth FET inverter amplifier means having an input connection, and having an output connection connected to said first node and having first and second supply connections connected to said first and second supply terminals, respectively, and

means for completing a degenerative feedback connection between the output and input connections of said fourth inverter amplifier means;

means for combining signals including

a second node,

means for connecting the output connection of said first inverter amplifier means to said second node, and

means for connecting the output connection of said second inverter amplifier means to said second node; and

output means connecting said second node to said output terminal.

4,333,058

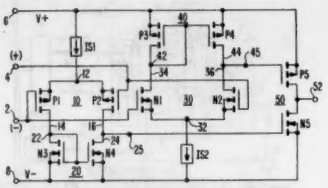
OPERATIONAL AMPLIFIER EMPLOYING COMPLEMENTARY FIELD-EFFECT TRANSISTORS

Merle V. Hoover, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,291

Int. Cl.³ H03F *3/45, 3/16*

U.S. Cl. 330—253 **11 Claims**



1. An amplifying circuit comprising:

first and second supply terminals for receiving relatively positive and relatively negative operating potentials, respectively;

inverting and non-inverting input terminals for receiving input signals thereat, and a signal output terminal;

a first differential-input amplifier means including:

first and second field-effect transistors, of P-channel conductivity type and in long-tailed pair connection, having respective gate electrodes to which said inverting and non-inverting input terminals respectively connect, having respective source electrodes connected to a tail connection, and having respective drain electrodes,

means for supplying a first tail current connected between the tail connection of said first differential-input amplifier means and said first supply terminal,

first current mirror amplifying means having an input and an output connection, and having a common connection to which said second supply terminal connects,

means for connecting the input connection of said first current mirror amplifying means to the drain electrode of said first transistor, and

an output connection of said first differential-input amplifier means at which output resistance is exhibited responsive to the connections of the output connection of said first current mirror amplifying means and the drain electrode of said second transistor thereto;

a second differential-input amplifier including:

third and fourth field-effect transistors, of N-channel conductivity type and in long-tailed pair connection, having respective gate electrodes to which said inverting and non-inverting input terminals respectively connect, having respective source electrodes connected to a tail connection, and having respective drain electrodes,

means for supplying a second tail current connected between the tail connection of said second differential-input amplifier means and said second supply terminal;

second current mirror amplifying means having an input and an output connection, and having a common connection to which said first supply terminal connects,

means for connecting the input connection of said second current mirror amplifying means to the drain-electrode of said third transistor, and

an output connection of said second differential-input amplifier means at which output resistance is exhibited responsive to the connections of the output connection of said second current mirror amplifying means and the drain electrode of said fourth transistor thereto;

output amplifier means including

first and second input connections for providing respective

relatively high resistances as compared to the output resistances of the output connections of said first and second differential-input amplifier means, respectively, and

fifth and sixth field-effect transistors of N-channel and P-channel type, respectively, each in common-source amplifier configuration having respective source electrodes directly connected to said second and first supply terminals respectively having respective drain electrodes connected to said signal output terminal, and having respective gate electrodes serving as the first and second input connections, respectively, of said output amplifier means;

means for directly connecting the output connection of said first differential-input amplifier means to the first input connection of said output amplifier means without substantially reducing the resistance exhibited thereat; and

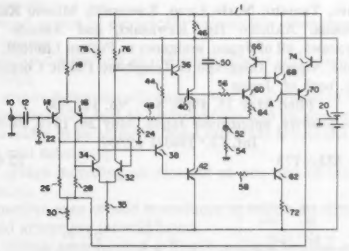
means for directly connecting the output connection of said second differential-input amplifier means to the second input connection of said output amplifier means without substantially reducing the resistance exhibited thereat.

4,333,059

POWER AMPLIFYING CIRCUIT

Hiroyasu Yamaguchi, Yokohama, and Takashi Ishii, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 27, 1980, Ser. No. 134,676
Claims priority, application Japan, Mar. 31, 1979, 54/38635
Int. Cl.³ H03F *3/26*
U.S. Cl. 330—265 **4 Claims**



1. A power-amplifying circuit which comprises:

pre-amplifier means for amplifying an input signal;

output means including a push-pull pair of first and second transistors driven in accordance with an output signal from said pre-amplifier means;

feedback means for detecting currents of said first and second transistors and for supplying a signal corresponding to a product of the currents detected to said pre-amplifier means through a negative feedback path in order to regulate the quiescent currents of said first and second transistors;

a power supply terminal which is connected to said output means with a prescribed level of voltage impressed thereon; and

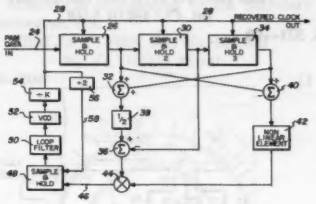
bias means connected to said feedback means and pre-amplifier means for selectively providing a voltage thereto higher than said prescribed level of voltage.

4,333,060

PHASE LOCKED LOOP FOR RECOVERING DATA BIT TIMING

William H. Mosley, Jr., St. Petersburg, and Carl F. Andren, Indiatlantic, both of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Jul. 10, 1980, Ser. No. 167,545
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—1 A **28 Claims**



19. A method for recovering the data bit timing of a received signal including a plurality of data bits, comprising the steps of:

sampling the received signal at a sample rate of twice the data bit frequency to provide mid-bit samples taken at the middle of each data bit and to provide transition samples taken at the middle of each transition between data bits;

producing a control signal proportional to the difference between the average of adjacent mid-bit samples and the transition sample taken between the adjacent mid-bit samples;

producing an oscillator means signal in response to the control signal, said oscillator means signal corresponding to the data bit frequency of the received signal; and

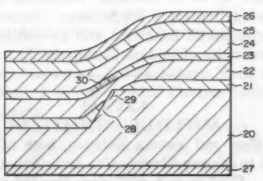
said sampling being responsive to the oscillator means signal to vary the sampling rate whenever a difference exists between the magnitudes of the transition bit sample and the average of the mid-bit samples adjacent to the transition bit sample.

4,333,061

TERRACED SUBSTRATE SEMICONDUCTOR LASER

Yukihiro Sasatani, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 21, 1980, Ser. No. 151,851
Claims priority, application Japan, May 30, 1979, 54-67307
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—46 **4 Claims**



1. In a semiconductor laser, a light emitting semiconductor device having a double hetero junction structure comprising: a semiconductor substrate of a first conductivity type; a stair-shaped step part in the form of a stripe on a surface of said substrate; a current blocking layer of a second conductivity type formed as a surface of said semiconductor substrate, said current blocking layer being interrupted along an edge portion of said stair-shaped part to form a break area in said current blocking layer in the form of a stripe, said break area forming a current concentration region; and a lower clad layer of said first conductivity type, an active layer of one of said first and

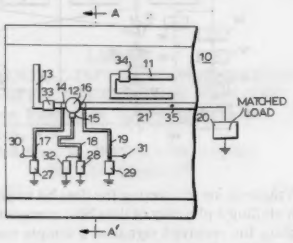
second conductivity types, and an upper clad layer of said second conductivity type formed on said current blocking layer and said break area in the stated order.

4,333,062

TEMPERATURE STABILIZED MIC SOLID-STATE OSCILLATOR

Tomoki Uwano, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 27, 1979, Ser. No. 107,616
Int. Cl.³ H03B *5/18*
U.S. Cl. 331—99 **2 Claims**



1. A temperature-stabilized MIC solid-state oscillator fabricated in the form of a planar transmission circuit and comprising:

a first strip line resonator having a first chip capacitor having linear capacitance temperature variation characteristics inserted serially in the middle of said first strip line, the resonant frequency temperature coefficent of said first strip line resonator being provided continuously by position of said first chip capacitor, wherein said first strip line resonator is coupled electromagnetically to a strip transmission line connecting an oscillating device with a load circuit of an oscillator, and operates as a band rejection filter and which is a load circuit of said oscillating device; and

a second strip line resonator having a second chip capacitor having linear capacitance temperature variation characteristics inserted serially in the middle of said second strip line resonator, said second strip line resonator being a type of serial resonator in order to equivalently ground a port of said oscillating device which is to be grounded for an oscillating condition, whereby each of said two strip line resonators shares an effect of compensation in regard to oscillation frequency temperature characteristics of said oscillator so as to decrease variations of compensated oscillating frequency temperature characteristics caused by variations of said load and caused by variations of characteristics of said oscillating device.

4,333,063

AMPLITUDE EQUALIZER

Toshihiko Ryu, and Yutaka Koizumi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,164
Claims priority, application Japan, Dec. 3, 1979, 54-156609; Dec. 3, 1979, 54-156610
Int. Cl.³ H03H *7/03, 11/06*
U.S. Cl. 333—18 **4 Claims**

1. An amplitude equalizer for equalizing input signals having amplitude distortion within a predetermined frequency band, comprising:

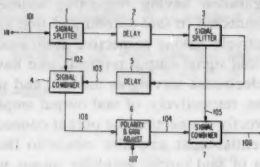
(i) first means for splitting said input signals into first and second output signals;

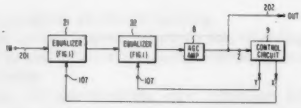
(ii) second means receiving said first output signal and having a predetermined delay time within said frequency band to provide a first delayed output;

(iii) third means for splitting said first delayed output into third and fourth output signals;

(iv) fourth means receiving said third output signal and having a delay time equal to said predetermined delay time to provide a second delayed output;

(v) fifth means for combining said second output signal and





said second delayed output to provide a first combined signal;

(vi) sixth means for varying at least one of the amplitude and polarity of said first combined signal to provide an adjusted signal; and

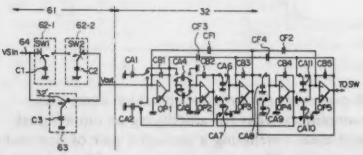
(vii) seventh means for combining said fourth output signal and said adjusted signal to provide equalized signals.

4,333,064

SWITCHED-CAPACITOR FILTER

Seiji Kato, Yamato; Norio Ueno, Kawasaki; Mitsuo Kakuishi, Yokohama; Akihiko Ito, Kawasaki, and Atsushi Iwata, Tokorozawa, all of Japan, assignors to Fujitsu Limited, Kawasaki and Nippon Telegraph & Telephone Public Corporation, Tokyo, both of, Japan

Filed May 23, 1980, Ser. No. 152,558
Claims priority, application Japan, May 28, 1979, 54-65828
Int. Cl.³ H03H *19/00*
U.S. Cl. 333—173 **12 Claims**



1. A prefilter for the input stage of a switched-capacitor filter, said switched-capacitor filter comprising a switched capacitor and associated switching means common to said switched-capacitor filter and said prefilter, and being driven by primary clock pulses having a period T for sampling an input signal to be supplied to said switched-capacitor filter via said prefilter, wherein said prefilter comprises:

(2^k-1) (k being a positive integer) units of switched capacitors;

means for providing secondary clock pulse groups to drive said (2^k-1) units of switched capacitors, each of said secondary clock pulse groups having the same period T and the phases of said secondary clock pulse groups being

shifted by $T/2^k$, $2T/2^k$, $3T/2^k$ . . . $(2^k-1)T/2^k$ with respect to said primary clock pulses;

said switched capacitor common to said switched-capacitor filter and said prefilter being driven by said primary clock pulses;

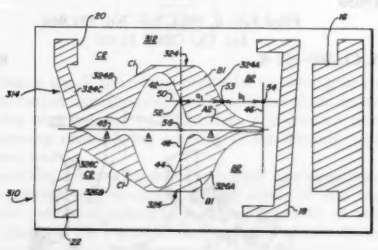
wherein each of said (2^k-1) units of switched capacitors samples and holds the input signal at each corresponding one of said secondary clock pulse groups successively, then, the signals sampled and held by said (2^k-1) switched capacitors are added to the signal sampled and held by said switched capacitor common to said switched-capacitor filter and said prefilter, and the sum signals are supplied to said switched-capacitor filter synchronously with said primary clock pulses.

4,333,065

LOW REFLECTIVITY APODIZED SURFACE ACOUSTIC TRANSDUCER WITH MEANS TO PREVENT WAVEFRONT DISTORTION

Adrian J. DeVries, Mount Prospect, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 9, 1980, Ser. No. 195,587
Int. Cl.³ H03H *9/145, 9/25, 9/64*
U.S. Cl. 333—194 **10 Claims**



1. In a surface acoustic wave transducer of the type having:

a substrate;

a pair of arrays of electrically conductive elements on said substrate;

means for connecting an electrical circuit across said pair of arrays;

said arrays being interdigitated over an active area for coupling between said electrical circuit and an acoustic wave traveling in an acoustic beam direction across the surface of said substrate;

said arrays including an element at one end of said transducer;

an inactive area of said transducer in which no elements of said arrays are interdigitated;

said active area having a first boundary nearest said end element; and

a continuous covering of material adapted to alter the surface acoustic velocity of said substrate over only a portion of said inactive area between said first boundary and said end element;

said covered area having a second boundary between said first boundary and said end element;

said boundary being so shaped that the surface acoustic transit time along a path parallel to said beam direction between said first boundary and said end element is substantially equal across at least the major portion of the aperture of said transducer;

the improvement wherein said second boundary is shaped along the major portion of its length so as to substantially satisfy the equation

$$(a+b)/V_T=(a/V_M)+(b/V_F)$$

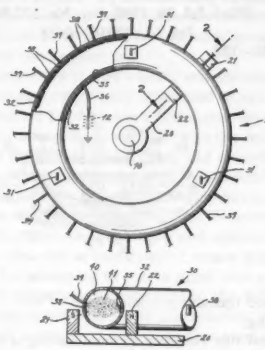
where a is the distance along a line parallel to said beam direction from any point on said first boundary, b is the distance along said parallel line from said intersection with said second boundary to said end element, V_T is the surface acoustic velocity in said active area, V_M is the surface acoustic velocity along said distance a, and V_F is the surface acoustic velocity along said distance b.

4,333,066

POSITION TRANSDUCER

Charles D. Roach, Newport News, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 7, 1980, Ser. No. 166,652
Int. Cl.³ H01H *36/00*
U.S. Cl. 335—206 **11 Claims**



1. Transducer apparatus for indicating the position of an element movable in a predictable path, comprising

magnet means mounted to the movable element, whereby the magnet traces a fixed path on movement of the element in its predictable path,

an enclosed conduit, the conduit being mounted in fixed position apart from the movable element and extending adjacent to the fixed path of the magnet means, and

the conduit containing a liquid having suspended therein a mass of ferromagnetic, electrically conductive material, whereby the suspended mass is drawn along within the tube adjacent to the magnetic means, and further comprising

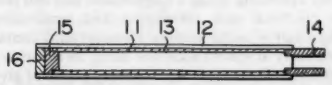
electrode means, extending the length of the conduit, to monitor the position of the suspended particles.

4,333,067

CERAMIC TYPE SENSOR DEVICE

Koichi Kugimiya, Toyonaka; Fumio Hosomi, Hirakata; Yoshihiro Matsuo, Neyagawa, and Tsuneharu Nitta, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 14, 1980, Ser. No. 130,434
Claims priority, application Japan, Mar. 20, 1979, 54-32688; Jun. 14, 1979, 54-75307; Jun. 14, 1979, 54-75309
Int. Cl.³ H01L *7/00*
U.S. Cl. 338—34 **10 Claims**



1. A sensor device of a ceramic type comprising a sensing element formed of a ceramic material, at least a pair of electric conductors electrically connected to said sensing element and at least two output terminals for connecting said electric con-

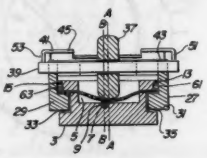
ductors with an external circuit, wherein at least one of said paired electric conductors is tightly and closely embedded within an insulating body of a ceramic material except for those portions of said electric conductor at which said conductor is connected to said sensing element, wherein at least one of said output terminals is partially embedded within said insulating body, said insulating body being composed of a voidless solid supporting part and a coating part, said electric conductors being interposed between opposite surfaces of said voidless solid supporting part and said coating part.

4,333,068

POSITION TRANSDUCER

Joseph F. Kishel, Clarks Summit, Pa., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Jul. 28, 1980, Ser. No. 172,902
Int. Cl.³ H01C *10/28*
U.S. Cl. 338—158 **16 Claims**



1. A sealed transducer comprising:
(a) housing;
(b) at least one resistive element having a curved surface disposed in said housing;
(c) a flexible membrane disposed in a non-contacting relationship with each said resistive element, said flexible membrane having a conductive portion facing each said resistive element;
(d) means for sealing said flexible membrane to said housing;
(e) means for making respective electrical connections with said flexible membrane and each said resistive element; and
(f) means, movable with respect to and engaging said flexible membrane, for engaging said flexible membrane to cause said conductive portion of said membrane to contact each said resistive element, said means including at least one roller means, each said roller means having its plane of rotation offset from a plane which includes the longitudinal axis of each said resistive element whereby a wiping action is produced between said conductive portion of said flexible membrane and the surface of each said resistive element.

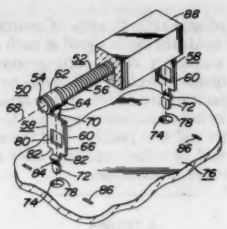
4,333,069

ELECTRICAL RESISTOR FOR A PRINTED CIRCUIT BOARD AND METHOD OF MAKING THE SAME

Joseph P. Worth, West Jefferson, and Bert B. Fletcher, Boone, both of N.C., assignors to TRW, Inc., Cleveland, Ohio

Filed Nov. 14, 1980, Ser. No. 206,703
Int. Cl.³ H01C *1/01*
U.S. Cl. 338—315 **14 Claims**

1. An electrical resistor for a printed circuit board comprising a body extending along a longitudinal axis and providing a resistive electrical path therealong, and terminating means including a pair of metal terminal elements each contacting the elongated body at spaced locations along its resistive path, the metal terminal elements each comprising a strip of given width having a first end portion extending substantially about for being secured with the elongated body at a spaced location therealong and a second end portion, the second end portion extending in a direction transverse to the axis of the body and having a tip for being receiving through an opening in a printed circuit board, each strip having an intermediate neck portion of reduced width with respect to the given width of the strips which is positioned proximate to the body and



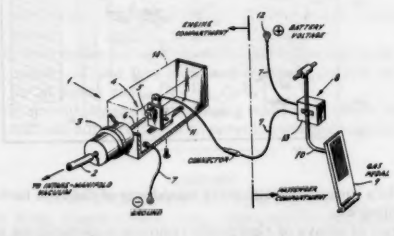
twisted so that the extending second end portion is in a plane which is perpendicular to the axis of the body.

4,333,070

MOTOR VEHICLE FUEL-WASTE INDICATOR

Robert W. Barnes, 108 Deep Dale Dr. East, Levittown, Pa. 19056

Filed Feb. 6, 1981, Ser. No. 231,966
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—52 R **8 Claims**



1. The use of an electro-mechanical vibrator to signal the driver of a motor vehicle, said vehicle having an internal battery, a driver-operated gas pedal, and an internal combustion engine which produces a manifold-vacuum in the intake manifold, as to the state of said vacuum being above or below a pre-selected level, by mechanically coupling said vibrator to the gas pedal under the driver's foot, coupling a sensing assembly to said vacuum, said sensing assembly providing means for connecting a suitable voltage from said battery to said vibrator when said vacuum is below said pre-selected level thereby actuating said vibrator, and for disconnecting said voltage when said vacuum is above said pre-selected level, thereby de-energizing said vibrator.

4,333,071

SELF-CANCELLING APPARATUS FOR VEHICLE TURN INDICATORS

Hiroshi Kira, 6135 Fairview Pl., Aguora, Calif. 91301, and Verne W. Bauman, 887 Conestoga Cir., Newbury Park, Calif. 91320

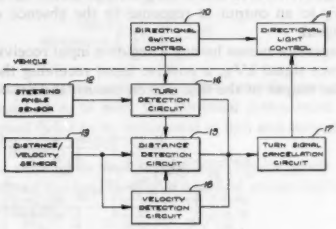
Filed Aug. 7, 1980, Ser. No. 176,073
Int. Cl.³ B60Q *1/40*; H01H *3/16*
U.S. Cl. 340—56 **10 Claims**

1. A self-cancelling apparatus for vehicle indicator signals for a vehicle having a rotating steering member which rotates relative to the vehicle frame and turn signal means selectively operable for activating and deactivating the vehicle turn signal means comprising:
(a) steering angle sensor means for detecting the change in

the relative angle between the rotating steering member and the frame of the vehicle;

(b) angle sensor processing means for producing a binary electrical output signal having on and off states responsive to the change in the relative angle between the rotating steering member and the frame of the vehicle, said on state occurring when said change exceeds a predetermined angle, said off state occurring when the change does not exceed the predetermined angle, said angle sensor processing means being coupled to said steering angle sensor means;

(c) distance sensor means for sensing the distance traveled by the vehicle, said distance sensor means being coupled to the vehicle;



(d) distance sensor processing means for producing an electrical output signal responsive to a predetermined distance having been traveled by the vehicle, said distance sensor processing means being coupled to the distance sensor means; and

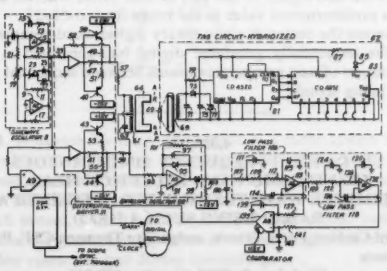
(e) cancellation means for deactivating the turn signal means when the binary electrical output signal of said angle sensor processing means has switched from the on to the off state and the electrical output signal of said distance sensor processing means coincides with the off state, said cancellation means being coupled to the outputs of said angle sensor processing means and said distance sensor processing means.

4,333,072

IDENTIFICATION DEVICE

Michael Beigel, Warwick, N.Y., assignor to International Identification Incorporated, Rosemount, N.J.

Filed Aug. 6, 1979, Ser. No. 64,181
Int. Cl.³ G01S 9/56; H04Q 7/00, 9/00
U.S. Cl. 340—825.54 **6 Claims**



1. A reflective close-coupled identification system comprising:

a first electrical circuit adapted to be connected to a source of alternating current and having a first inductive element;

a second electrical circuit to be associated with the object to be identified and having a second inductive element adapted to be inductively coupled to said first inductive element for inducing an alternating voltage in said second circuit, all power consumed in said second circuit being derived from said first inductive element;

means for selectively loading and unloading said second circuit in a predetermined time sequence over a predetermined period of time including a circuit operatively connected to said second inductive element and having a plurality of terminal pairs, the terminals of each pair being either conductively coupled for loading said second circuit when connected to said second inductive element or insulated from one another for unloading said second circuit when connected to said second inductive element, and means for sequentially connecting each of said terminal pairs to said second inductive element, said second circuit being loaded with the terminals of the terminal pair connected to said second inductive element are conductively coupled and said second circuit being unloaded when the terminals of the terminal pair connected to said second inductive element are insulated from one another; and

sensor means responsive to said loading and unloading including detector means operatively connected to said source of alternating current for deriving a first signal having a characteristic with a magnitude variable with the instantaneous magnitude of the rate of said loading and unloading;

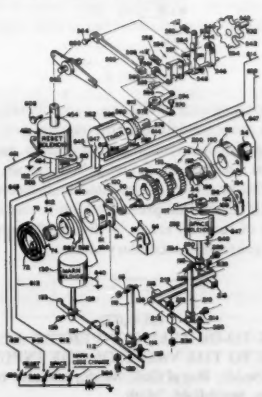
averaging means operatively connected to said source of alternating current for deriving a second signal having a characteristic with a magnitude proportional to the average of said first signal characteristic magnitude; and subtracting means operatively connected to said detector means and said averaging means for producing an output signal with a characteristic having a magnitude proportional to the difference between said first and second signal characteristic magnitudes and varying in a time sequence dependent upon said predetermined time sequence, thereby providing such identification.

4,333,073

ELECTROMECHANICAL DECODER

Peter J. Caruso, Wayne, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed May 28, 1964, Ser. No. 371,072
Int. Cl.³ E05B 37/00, 45/06
U.S. Cl. 340—825.36 **45 Claims**



37. In a decoder mechanism of a type having a predetermined code setting, the combination comprising means for varying the code setting of the mechanism, and means operably controlled by the mechanism for rendering the code varying means effective upon completion of a predetermined cycle of operation of the decoder mechanism.

4,333,074
SECURITY SYSTEM

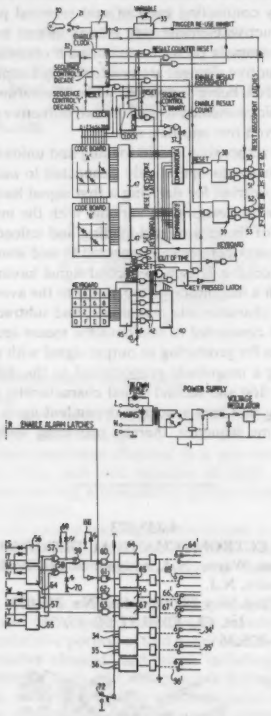
Hugh E. Sutherland, London; Philip J. Spiegelhalter, East Barnet; Martin R. Spiegelhalter, Horam, and Brian H. Goring, Southwater, all of England, assignors to Southwater Security Limited, West Sussex, England

Filed Mar. 5, 1980, Ser. No. 127,305

Claims priority, application United Kingdom, Mar. 7, 1979, 7908009

Int. Cl.³ H04Q *3/00*

U.S. Cl. 340—825.3 **6 Claims**



1. A security system including a combination device in which one or more predetermined combinations can be set by an operator to disable a system primary alarm, and comprising a logic circuit adapted to detect when the set combination differs from this or one of the predetermined combinations by an error which falls within prescribed limits, and in response to the detection of such an error, to disable the system primary alarm but to generate a secondary alarm.

4,333,075
ANALOG-TO-DIGITAL CONVERTER ACCURATE RELATIVE TO THE VALUE OF THE INPUT SIGNAL

Arliss E. Whiteside, Royal Oak, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 27, 1980, Ser. No. 134,600

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD **14 Claims**

1. A non-binary analog to digital converter comprising:

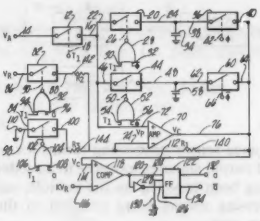
means receiving clock signals from an external source for repetitively generating a predetermined set of sequential timing signals including a first timing signal coincident with the first of said predetermined set of sequential timing signals;

first switch means having a first input receiving an input analog signal, a second input receiving a feedback signal V_C, a third input receiving said first timing signal, and an output, said first switch means having a first state transmitting said analog signal to said output in response to said first timing signal and a second state transmitting said feedback signal V_C to said output in response to the absence of said first timing signal;

analog signal storage means for storing an analog signal;

second switch means for transmitting the signal from the output of said first switch means to said analog storage means in response to a clock signal and transmitting the signal stored in said analog storage means having a value V_P to an output in response to the absence of a clock signal;

comparator means having a negative input receiving a reference signal kV_R, a positive input receiving the signal at the output of the first switch means, and an output, said



comparator means generating a digital output bit having a first value when the signal from the output of the first switch means is greater than the reference signal kV_R and a second value when the signal from the output of the first switch means is less than the reference signal kV_R; and

feedback signal generator means receiving said reference signal V_R, said stored signal V_P, and said digital output bit for generating a first feedback signal V_C having a value:

$$V_C=(1/(1-k))\ (V_P-kV_R)$$

when said digital bit has said first value and generating a second feedback signal having value

$$V_C=(1/k)V_P$$

when said digital bit has said second value, wherein k has a predetermined value in the range from $o<k<\frac{1}{2}$;

wherein the output is a non-binary digital word comprising the sequentially generated digital bits generated at the output of said comparator means between sequential first timing signals.

4,333,076
ULTRA-HIGH FREQUENCY SIMULTANEOUS TRANSMISSION AND RECEPTION HEAD, MILLIMETER WAVE TRANSMITTER - RECEIVER AND RADAR USING SUCH A HEAD

Gerard Cachier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 9, 1980, Ser. No. 157,344

Claims priority, application France, Jun. 12, 1979, 79 14990

Int. Cl.³ G01S *13/04*

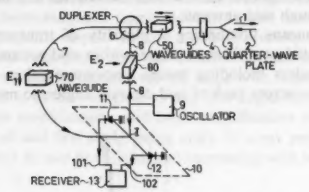
U.S. Cl. 343—5 DD **5 Claims**

1. An ultra-high frequency head comprising:

a microwave oscillator which can be used both as a transmission source and as a local oscillator;

a polarization duplexer having a first, a second and a third port, said first port opening onto a two-way square cross-

section guide destined to be connected with transmitting and/or receiving antenna, said second port opening onto a first rectangular cross-section guide coupled with said microwave oscillator and having a straight longitudinal shape, and said third port opening onto a second rectangular cross-section guide having a shape bent in such a manner that it intersects with said first rectangular guide, the



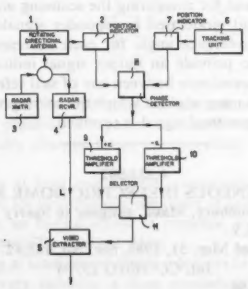
rectangular cross-section of both rectangular guides being arranged so as to have the electrical components of the electrical fields to be orthogonal in first and second retangular guides;

a mixer situated in said second rectangular guide in the vicinity of the intersection of said first and second rectangular guides.

4,333,077
DEVICE FOR DISTANCE ACQUISITION IN A RADAR SYSTEM

Michel Teilhet, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 12, 1980, Ser. No. 158,793
Claims priority, application France, Jun. 13, 1979, 79 15138
Int. Cl.³ G01S *13/86*
U.S. Cl. 343—6 R **8 Claims**



1. A device for range acquisition in a radar system constituted by a surveillance radar equipped with a mobile directional antenna rotating continually around an axis and with first indicating means for giving the direction of said antenna at each instant, a tracking unit provided with second indicating means for giving the direction of a line of sight thereof, and a video extractor, said device comprising:

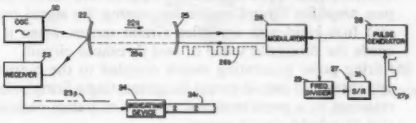
detecting means controlled by said first and second indicating means for ascertaining a coincidence of the direction of said mobile antenna with the direction of the line of sight of said tracking unit, and

enabling means controlling said extractor in response to signals from said detecting means for initiating measurement of the distance of a tracked echo-emitting target by surveillance signals upon an occurrence of said coincidence.

4,333,078
APPARATUS FOR SYNCHRONIZED RECEPTION IN CONNECTION WITH SYSTEM FOR RECORDING OBJECTS

Bengt Henoch, Hagersten, and Eilert Berglind, Bandhagen, both of Sweden, assignors to Stiftelsen Institutet for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm, Stockholm, Sweden

Continuation-in-part of Ser. No. 67,139, Aug. 16, 1979, abandoned. This application May 29, 1981, Ser. No. 268,496
Claims priority, application Sweden, Aug. 25, 1978, 7809018
Int. Cl.³ G01S *13/76, 13/80, 13/82*
U.S. Cl. 343—6.5 LC **6 Claims**

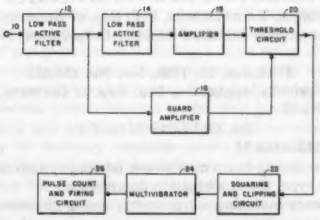


4. A radio communication apparatus for a system having at least first and second stations in which one of said stations is movable relative to the other of said stations, means located at said first station for transmitting a first signal, a transceiver located at said second station for receiving said first signal and comprising (a) first means for supplying information in the form of a coded digital signal which defines the bits of a plural bit binary word and (b) second means electrically connected to said first means for producing a pulse signal having (i) a pre-selected number of cycles at a first pre-selected frequency for each binary 1 bit in said digital signal and (ii) a pre-selected number of cycles at a second pre-selected frequency for each binary 0 bit in said digital signal, said second frequency being different from said first frequency, said transceiver further comprising means electrically connected to said second means for modulating said first signal with said pulse signal to produce a modulated signal, and means electrically connected to said modulating means for transmitting said modulated signal, there being a unit located at said first station and including first means for receiving said modulated signal and for recovering said pulse signal from the received modulated signal, and further means electrically connected to said first means of said unit, said further means being responsive to the frequencies in the recovered pulse signal and also to the number of cycles of said first and second frequencies in the recovered pulse signal for producing a data signal containing said information.

4,333,079
DOPPLER SIGNAL PROCESSING CIRCUIT

John O. Dick; Joe A. McKenzie, both of Riverside, Calif., and William C. Bradford, Hyattsville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 21, 1970, Ser. No. 63,975
Int. Cl.³ F42C *13/04*
U.S. Cl. 343—7 PF **4 Claims**



1. In a doppler signal processing circuit for producing a

warhead firing pulse in a missile, target encounter, the combination comprising:

(a) first band-pass amplifier circuit means for amplifying the received doppler signal within a predetermined frequency range,

(b) second band-pass amplifier circuit means amplifying only received signals of a higher frequency than the doppler signals amplified by said first band-pass amplifier circuit means for generating a control signal proportional to the signal passed by said second band-pass amplifier,

(c) threshold circuit means coupled to the output of said first and second band-pass amplifier circuit means having a predetermined threshold value that is increased when a control signal is present at the output of said second band-pass amplifier circuit means for passing the signal out of said first band-pass amplifier circuit means when it exceeds the threshold value of said threshold circuit,

(d) firing pulse generating means coupled to the output of said threshold circuit means for generating a firing pulse in response to a predetermined number of pulses passed by said threshold circuit means.

4,333,080

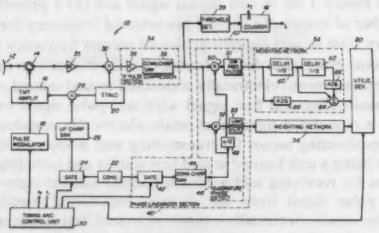
SIGNAL PROCESSOR

John D. Collins, Burlington; Douglas S. MacFall, Jr., Winchester, and William A. Sciarretta, Lexington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 18, 1977, Ser. No. 816,422

Int. Cl.³ G01S *13/28*

U.S. Cl. 343—17.2 PC **12 Claims**



1. A signal processor, comprising:

(a) means for pulse compressing an intermediate frequency chirp pulse to produce a compressed pulse having a linearly frequency modulated, intermediate frequency component; and

(b) means for removing the linearly frequency modulated, intermediate frequency component of such compressed pulse, such removing means including a quadrature phase detector means for separating the compressed pulse into a pair of quadrature video compressed pulses.

4,333,081

MONITORING SYSTEM FOR SCANNING-BEAM MICROWAVE LANDING APPARATUS

Günter Höfgen, Kornwestheim, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,655

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924847

Int. Cl.³ G01S *1/54, 7/40*

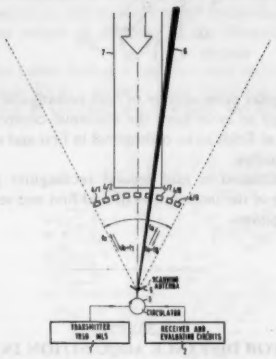
U.S. Cl. 343—108 M **7 Claims**

1. In a scanning-beam microwave landing system of the time reference type, the combination comprising:

first means including a transmitter and a directive antenna for transmitting a continuous wave narrow beam of microwave energy and for scanning said beam through a predetermined angular sector in successive scan cycles each consisting of a sweep from a starting angular position through said sector to a predetermined angular limit and a return sweep from said angular limit through said sector to said starting angular position;

second means including a receiver and duplexing means, said receiver and said transmitter being connected to said antenna through said duplexing means to permit contemporaneous operation of said transmitter and said receiver through said antenna;

third means comprising a plurality of transponders each located at a discrete angle within said sector, said transponders including means responsive when said beam scans across each of said discrete angles, to modulate and



retransmit to said antenna, a signal discretely modulated as a function of the corresponding discrete transponder angle, said receiver being responsive to each retransmitted signal during said sweep of said beam across said angle of each corresponding transponder; and

fourth means responsive to the output of said receiver for providing an angle reference for each discrete transponder angle and for comparing the scanning angle at which each of said modulated transponder signals is received with said reference angle for each corresponding transponder, to provide an output signal indicative of any non-correspondence between any of said reference angles and the scanning angle at which the corresponding modulated retransmitted signal is received.

4,333,082

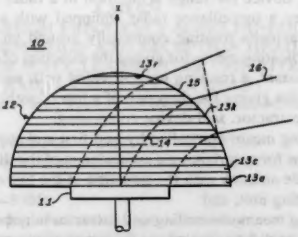
INHOMOGENEOUS DIELECTRIC DOME ANTENNA

Leon Susman, Sudbury, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,427

Int. Cl.³ H01Q *15/08*

U.S. Cl. 343—754 **3 Claims**



1. A scanning antenna including a dome shaped substantially

as a hemisphere having an external surface at a radius R, a base plane substantially coincident with said hemisphere's equatorial plane, a z-axis perpendicular to said base plane with z values increasing therefrom, and a dielectric material with a dielectric constant $\epsilon(z)$ that decreases linearly as said Z-values increase in accordance with $\epsilon(z)=1=+K(1-z/R)$, K being a constant, filing substantially all space between said base plane and said external surface, constructed and arranged such that a ray of an electromagnetic signal incident to said base plane at a first angle with respect to said z-axis is plurally refracted between said base plane and said external surface to emerge from said external surface at a second angle with respect to said z-axis which is at least as great as said first angle, thus providing an angle amplification, said angle amplification varying as a function of said first angle, being unity for a ray perpendicularly incident to said base plane and increasing with increasing first angle.

4,333,083

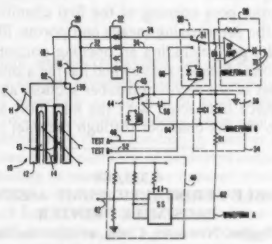
ELECTROSTATIC DROP SENSOR WITH SENSOR DIAGNOSTICS FOR INK JET PRINTERS

Stephen F. Aldridge, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,478

Int. Cl.³ G01D *9/00, 15/18*

U.S. Cl. 346—1.1 **11 Claims**



11. A method for operating an electrostatic drop sensor including a plurality of spaced conductors between which electrostatically charged drops are propelled, comprising the steps of:

connecting at least one of said conductors to a reference potential for conditioning the other of said conductors to produce an output signal in response to passage of an electrostatically charged drop;

connecting at least one of said conductors to a test signal for capacitively inducing a drop simulating signal into the other of said conductors to produce an output signal indicative of the proper operation of said sensor.

4,333,084

PROGRAM PACER

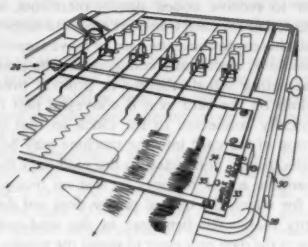
Donald A. Peterson, Berwyn, Ill., assignor to Stoelting Company, Chicago, Ill.

Filed Oct. 6, 1980, Ser. No. 194,761

Int. Cl.³ G01D *9/00*

U.S. Cl. 346—17 **4 Claims**

1. Polygraphic apparatus including a chart area and a graphic output device for producing a record representative of the pulse of the subject; said apparatus including a timed lighting display means adjacent to the chart area for indicating



when the examiner and examinee have time to ask and respond to a test examination question before the next question.

4,333,085

TIME RECORDER

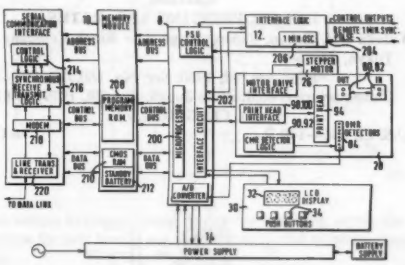
Alan G. Witts, Wimborne, England, assignor to ITR International Time Limited, Dorset, England

Filed May 30, 1980, Ser. No. 155,128

Claims priority, application United Kingdom, Jun. 1, 1979, 7919135

Int. Cl.³ G01D *15/10;* **G07C** *1/06*

U.S. Cl. 346—76 PH **13 Claims**



1. A time clock for use with thermographic time cards on which are to be printed legible characters recording the times at which each card is inserted in the machine and a two-dimensional array of optically readable marks identifying individual cards and which for each card accumulates time for successive periods between pairs of insertions of the card into the clock according to semipermanent timekeeping information entered into the machine, comprising in combination:

(a) a housing;

(b) means in said housing defining a card inlet aperture;

(c) a card guide channel within the housing and communicating at one end with the card inlet aperture;

(d) an optical reader located in the card guide channel and arranged to read the array of marks (if any) present on a card conveyed along the card guide channel;

(e) card transport means including a drive roller disposed in said card guide channel in driving engagement with a card to convey said card stepwise along said channel;

(f) a thermal printer located in the card guide channel for printing said legible characters and said two-dimensional array of optically readable marks on cards conveyed along the card guide channel;

(g) means for providing clock signals;

(h) a read-only memory that contains firmware instructions for the operation of the time-clock;

(i) a random-access memory that contains locations in which are stored variable instructions relating to time accumula-

tion and locations in which data relating to the several cards is accumulated; and

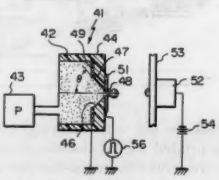
(j) a data processor that is electrically connected to the card reader to receive coded signals therefrom, electrically connected to the card transport means to supply actuating signals thereto to cause the card to move stepwise through the machine, electrically connected to the printer to supply actuating signals thereto to print in predetermined locations on the card as it is conveyed past the printer, electrically connected to the clock so that the time of insertion of the card into the machine may be calculated and electrically connected to the read-only memory and the random access memory so that on receipt of a time card for which the optical reader does not detect coded identity marks the firmware in the read-only memory instructs the data processor to signal the printer to print on that card an array of coded identity marks relating to a random access memory location assigned to that card and on reinsertion of a card bearing coded identity marks recognized by the optical reader the firmware in the read-only memory instructs the data processor to cause the random access memory location assigned to that card to be accessed and the printer to print the time of insertion onto the card in legible characters.

4,333,086

INK JET PRINTING APPARATUS

Yutaka Ebi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,770
Claims priority, application Japan, Jun. 30, 1979, 54-82036
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **6 Claims**



1. An ink jet printing apparatus including an ink ejection passageway and ink supply means for supplying ink into the passageway with insufficient pressure to cause the ink to be discharged from the passageway, characterized by comprising:

first electrode means provided to the passageway;

second electrode means provided external of the passageway;

and

power source means for applying a first electric potential to the first electrode means for electrically polarizing the ink in the passageway and applying a second electric potential to the second electrode means for causing the polarized ink to be ejected from the passageway onto a sheet;

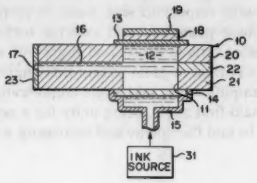
the first electrode means comprising an inlet electrode provided at an inlet of the passageway and an outlet electrode provided at an outlet of the passageway, the power source means applying the first electric potential to the outlet electrode and applying a potential to the inlet electrode such that the first and second electric potentials are opposite in polarity relative to the potential applied to the inlet electrode.

4,333,087

INK-JET RECORDING DEVICE

Yasuhiro Yamaguti, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 10, 1980, Ser. No. 168,253
Claims priority, application Japan, Jul. 18, 1979, 54/90362
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **5 Claims**



1. An ink-jet recording device comprising:

a container having an ink chamber for storing an ink body, having an opening formed on one side;

pressurizing means provided on one side of the container for applying pressure to the ink body in the ink chamber in accordance with an electric signal applied thereto;

a porous filter disposed inside the ink chamber to face the pressurizing means in a predetermined distance to divide the ink chamber into first and second chamber sections and directly subjected to the pressure applied by the pressurizing means;

an ink outlet port opening at the first chamber section between the pressurizing means and porous filter;

an ink inlet port including an opening communicated with the second chamber section and having a smaller diameter than that of the second chamber section; and

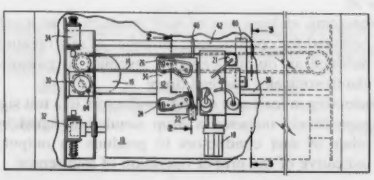
an ink source connected with the inlet port and supplying ink into the ink chamber through the inlet port.

4,333,088

DISPOSABLE PERISTALTIC PUMP ASSEMBLY FOR FACSIMILE PRINTER

Martin J. Diggins, Newtown, Conn., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 3, 1980, Ser. No. 203,589
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **22 Claims**



1. In facsimile apparatus of the type comprising ink jet apparatus for producing droplets of ink in response to print commands, said ink jet being supplied with ink from a disposable reservoir, said reservoir comprising means for priming and purging said jet and means for producing subatmospheric pressure in the vicinity of said jet to remove purged material, the improvement comprising said means for priming or purging said jet being of the peristaltic pump type comprising a first resilient tube having a first end and a second end, means for pressing said first tube closed at a point of closure intermediate said ends, and means for moving said point of closure from said first end of said tube towards said second end, and said means for producing subatmospheric pressure being of the peristaltic

pump type comprising a second resilient tube having an inlet end and an outlet end, means for pressing said second tube closed at a point of closure near said inlet end, and means for moving said point of closure towards said outlet end.

4,333,089

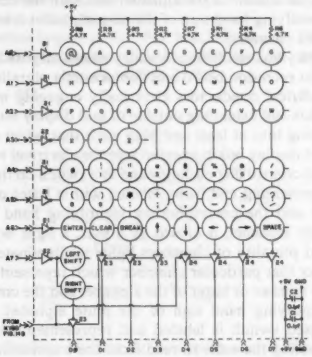
KEYBOARD AND CONTROL SYSTEM

Steven Leininger, Arlington, Tex., assignor to Radio Shack, Fort Worth, Tex.

Division of Ser. No. 926,957, Jul. 21, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,295

Int. Cl.³ G06F *3/02*

U.S. Cl. 340—365 S **5 Claims**



1. A keyboard and control system for use with a computer that includes a central processing unit, comprising;

a keyboard including a plurality of keys organized in an array of rows and columns having a plurality of keyboard input address lines corresponding in number to the number of rows, and a plurality of keyboard output data lines corresponding in number to the number of columns, column and row conductors to interconnect the keys in the array, each key having a contact coupled to a corresponding column conductor and a contact coupled to a corresponding row conductor and arranged to provide electrical continuity between the column and row conductors when the key is depressed,

a first plurality of input address lines AO–AN coupled from the central processing unit to the respective keyboard input address lines and forming first order address lines,

a plurality of output data lines DO–DN coupled to the central processing unit,

control circuit means for controlling data transfer between the keyboard and central processing unit, and intercoupling the keyboard output data lines to the respective output data lines DO–DN of the central processing unit and having a control input line,

a second plurality of input address lines coupled from the central processing unit and forming second order address lines,

decoder means responsive to predetermined second order address signals for selectively establishing a keyboard selection signal,

means coupling said keyboard selection signal to the control input line of the control circuit means,

and data processing circuitry for controlling the inputting of data via the keyboard to the central processing unit and comprising,

first means for interrogating the keyboard by coincidentally generating said predetermined second order address signals to in turn generate said keyboard selection signal, and bringing all first order address lines AO-14 AN to an enable state, whereby an output signal being detected on one of the output data lines DO–DN corresponding to the depressed key

thus indicating to the central processing unit that there has been a key depressed on the keyboard, said central processing unit having means for receiving said output signal,

second means responsive to receipt of said output signal for interrogating the keyboard selectively one of said first order address line at a time in sequence until a second output signal is generated on the selected output data line,

and means responsive to the output signal on one of the output data lines DO–DN corresponding to the depressed key, and responsive to one of the first order address lines AO–AN which causes the generation of said second output signal for providing a machine readable code.

4,333,090

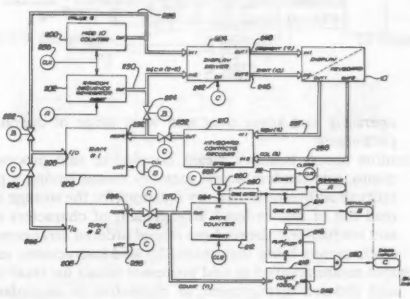
SECURE KEYBOARD INPUT TERMINAL

Steven B. Hirsch, 305 Peck Dr., Beverly Hills, Calif. 90212

Filed May 5, 1980, Ser. No. 146,404

Int. Cl.³ G06F *3/02*; E05B *45/06*

U.S. Cl. 340—365 VL **11 Claims**



1. A secure keyboard input device for inputting secret data sequences formed from a set of characters, said terminal comprising:

a keyboard comprising a plurality of data keys, and means for generating upon the actuation of any of said keys a first signal representing which particular key was actuated;

scramble means for apparently randomly assigning individual ones of said characters to individual ones of said data keys;

a plurality of individual character displays adapted for displaying individual ones of said characters, each of said character displays being associated with a respective one of said data keys;

means for causing each of said displays to display the character then assigned by said scramble means to the data key associated with that particular display;

unscramble means for translating said first signal representing which particular key was actuated to a second signal representing the particular character then assigned to said particular key by said scramble means; and

means for restricting the view of the character displays from other than the individual operating the keyboard.

4,333,091

COMMAND BUFFERS FOR ELECTRONIC CODE KEYER

Terry A. Perdue, St. Joseph, Mich., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 17, 1981, Ser. No. 255,013

Int. Cl.³ G06F *3/02*; H04L *13/08*; H03R *13/00*

U.S. Cl. 340—365 S **11 Claims**

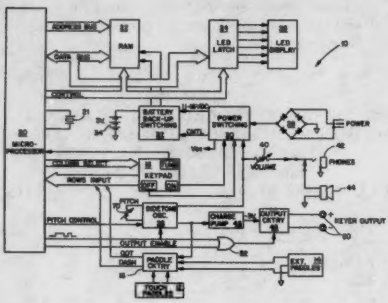
1. An electronic code keyer for automatically generating an

ordered arrangement of characters from a first and second sequence of coded signals wherein a plurality of keyer operating parameters may be varied over a wide range of values, said electronic code keyer comprising:

input means for generating said first sequence of coded signals;

control means for generating said second sequence of coded signals;

processor means coupled to said input means and to said control means and responsive to said first sequence of coded signals for generating said ordered arrangement of characters and responsive to said second sequence of coded signals for generating a plurality of instructions for



operating said keyer over said wide range of operating parameters;

random access memory means coupled to said processor means, said random access memory means having a plurality of addressable memory locations for the storage and read out of said ordered arrangement of characters and said instructions, the read out of said ordered arrangement of characters being determined by said instructions; and

output means coupled to said processor means for receiving said ordered arrangement of characters in accordance with said instructions and for transmitting said characters over a wide range of keyer operating parameters in accordance with said instructions.

4,333,092

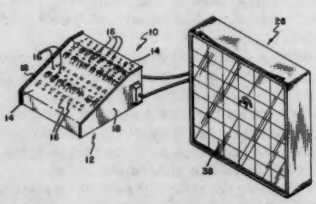
COMMUNICATION AID MEANS AND METHOD

Max N. Field, 501 E. 56th St. South, Wichita, Kans. 67216

Filed Jul. 14, 1980, Ser. No. 168,601

Int. Cl.³ G08B *5/22*

U.S. Cl. 340—378.2 **2 Claims**



1. An apparatus for communicating between a mute and another person comprising:

a control box including an alphanumeric keyboard having a plurality of spring-biased switches, each switch representing and being labeled with a number or a letter of the alphabet and with the corresponding identifying hand sign of the mute alphabet;

a control box electronic circuitry means disposed within said control box and having a power means and a plurality of conductors electrically engaging in series the power means and the switches and terminating into at least one electrical receptacle in communication with the outside of the control box;

a display box comprising a light retention board disposed within said display box and including a structure defining a plurality of open top square chambers having a paneled back including an aperture situated within each of said plurality of chambers; a plurality of lights removably lodging within said apertures such as to have one light per chamber; a translucent panel superimposing said open top chambers of said light retention board, said translucent panel being labeled with the identical indicia of the alphanumeric keyboard and being distributed such that a number or a letter of the alphabet and with the corresponding identifying hand sign of the mute alphabet is imposed over each chamber;

a display box electronic circuitry means disposed behind said light retention board and comprising a plurality of second electrical conductors electrically engaging in series said lights and extending outside of said display box and terminating into at least one plug such that when said plug of said display box is inserted into the electrical receptacle of said control box circuitry and as a switch on the keyboard, representing and being labeled with a letter of the alphabet and the corresponding identifying hand sign of the mute alphabet, is closed by a user, a light within one of said plurality of chambers lights to illuminate the indicia over that particular chamber which represents the identical number or letter of the alphabet and the corresponding identifying hand sign of the mute alphabet which said closed switch is labeled and represented with, thereby, enabling the mute to read from the translucent panel as it is illuminated by each light, said power means is a battery, said control box comprises two electrical receptacles, one receptacle situated on each side of said control box, each of said receptacles defined as an eighteen hole receptacle; said display box electronic circuitry means comprises two electronic plugs, each having eighteen prongs to mate with said eighteen hole receptacle; and said display box comprises a hinged box for obtaining access into the inside thereof in order to be able to replace said lights.

4,333,093

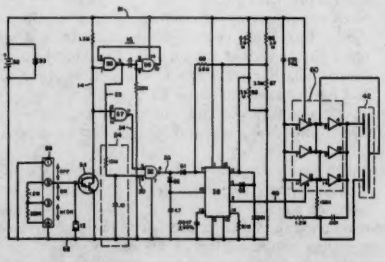
INTRUSION DETECTION SYSTEM

Samuel Raber, Allendale, and Irving L. Ellner, Hopatcong, both of N.J., assignors to Baker Industries, Inc., Parsippany, N.J.

Filed Apr. 28, 1980, Ser. No. 144,128

Int. Cl.³ G08B *13/00, 13/04, 13/08*

U.S. Cl. 340—566 **14 Claims**



1. An intrusion detection system for producing an alarm signal responsive to the repetition of a vibration-causing movement, comprising:

a vibration sensor, connected to produce an output signal responsive to each occurrence of the vibration-causing movement;

timing means connected to establish a sensing window

which is initiated upon the expiration of a predetermined delay time commenced by receipt of the first sensor output signal; and

a gate circuit, connected to be armed at the expiration of said delay time and to be triggered upon receipt of the first sensor output signal subsequent to the expiration of the predetermined delay time and prior to the expiration of said sensing window, thus producing the alarm signal only after the delay time has expired and at least one additional sensor output signal has been produced.

4,333,094

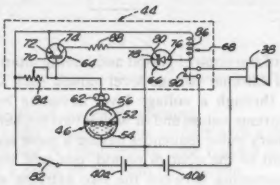
SWIMMING POOL ALARM

William E. Osborne, Whittier, Calif., assignor to Homexx International Corp., Anaheim, Calif.

Continuation-in-part of Ser. No. 966,382, Dec. 4, 1978, abandoned. This application Jun. 26, 1980, Ser. No. 163,314

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—566 **9 Claims**



1. A free-floating housing for use with a swimming pool alarm device, comprising:

a housing formed by top and bottom concave sections peripherally interconnected in confronting relation to provide an internal chamber;

a plurality of openings formed in a central area portion of said top section;

an upstanding cylindrical chimney surrounding said openings; and

a shielding cap secured to the upper end of said chimney.

4,333,095

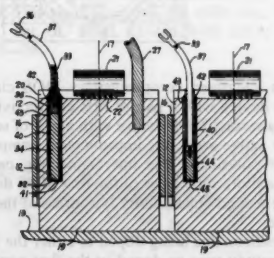
BRUSH WEAR INDICATOR

Edmund J. Silva, North Royalton, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Feb. 19, 1980, Ser. No. 122,297

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—679 **16 Claims**



1. A brush wear indicator for use in a dynamoelectric machine having a rotatable electrical conductor comprising in combination,

a brush holder in the dynamoelectric machine and having an axis,

a conductive brush movable axially in said brush holder and having a working face cooperable with and contactable with the rotatable electrical conductor,

indicator means,

an indicator contact having first and second ends and insulatedly mounted on said brush to move in accordance with brush wear movement, separate conductive means insulatedly mounted on said brush and having first and second ends with said second end connected to said indicator means and said first end connected to said second end of said indicator contact, and

said working face of said brush being disposed closer to said first end than to said second end of said indicator contact, whereby upon sufficient brush wear said indicator contact first end engages the rotatable electrical conductor of the dynamoelectric machine to complete an electrical circuit between said indicator contact first end and the rotatable electrical conductor and thus provide an indication at said indicator means.

4,333,096

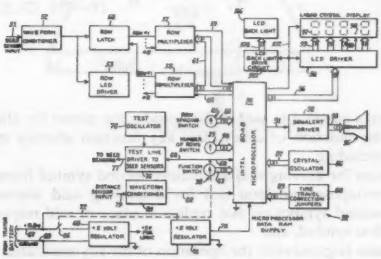
SEED PLANTER MONITOR

John P. Jenkins, Mackinaw; Stephen W. Rector, Bloomington; John J. McCarty, and William Hammond, both of Peoria, all of Ill., assignors to Field Electronics Inc., Bloomington, Ill.

Filed Jul. 27, 1979, Ser. No. 61,421

Int. Cl.³ G06F *15/20*; G08B *19/00*

U.S. Cl. 340—684 **12 Claims**



1. A monitor for a traveling seed planter operable to periodically dispense seeds in each of a plurality of rows, comprising:

seed sensing means for sensing the seeds planted in each row;

row counting means responsive to the seed sensing means and being operable to obtain a separate count of the seeds planted in each row;

means for determining the average number of seeds planted per row from the counts obtained by the row counting means;

means for determining the deviations between the counts obtained by the row counting means and the average number of seeds planted per row;

means for determining the maximum of said deviations;

error checking means for testing for an error condition occuring whenever said maximum deviation exceeds a predetermined limit; and

alarm means responsive to said error checking means for signalling an error condition.

4,333,097

VISUAL DISPLAY TERMINAL WITHOUT FINGER REPOSITIONING

Milorad R. Buric, Chatham, and Nicholas F. Maxemchuk, Mountainside, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 12, 1980, Ser. No. 186,424

Int. Cl.³ G09G *1/00*

U.S. Cl. 340—711 **2 Claims**

1. A terminal including

a keyboard having a plurality of keys,

means for producing a replica of said keyboard upon visual display apparatus,

a first set of labels for identifying a first keyboard layout pattern, said first set being displayed on said replica, a label comprising a symbol, said symbol for identifying a function of a key associated with said label, a respective first symbol for identifying a first function of a respective one of said keys and

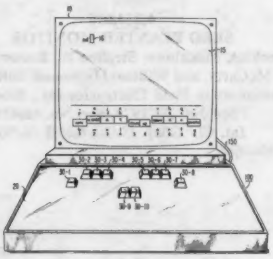
characterized in that said terminal further comprises

a second set of labels for identifying a second keyboard layout pattern,

said second set being displayed in a position juxtaposed to said replica,

said second set including an alternative second symbol for identifying a second function of said respective one of said keys;

said first set and said second set being concurrently displayed on said visual display apparatus,



means coupled to said replica producing means for altering the function of a key, said key function altering means including

means for moving said alternative second symbol from said juxtaposed position and for displaying said alternative second symbol on said replica in place of said respective first symbol, and

means responsive to the operation of the key associated with said first and said second symbols for replacing said first function with said second function;

each key being adapted for operation by a respective finger of an operator of said terminal and

each key being adapted for avoiding the repositioning of said fingers during the operation thereof and

there being no more keys than there are fingers of an operator.

4,333,098

PROCESS FOR THE THREE STEP-MULTIPLEX CONTROL OF ELECTRO-OPTICAL DISPLAY ARRANGEMENTS AND CIRCUIT FOR EFFECTUATING THE PROCESS

Hans Hentzschel, and Soni-Enrico Ludwig, both of Munich, Fed. Rep. of Germany, assignors to Eurosil GmbH, Munich, Fed. Rep. of Germany

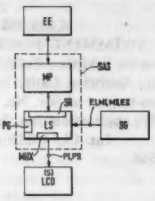
Filed Oct. 27, 1980, Ser. No. 201,151

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943339

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—805 **9 Claims**

1. In a process for the three step-multiplex control of electro-optical display arrangements which include segmented forward and back electrodes, effecting said control through periodic pulse sequences which include six pulses within one control period and which can presently assume four different voltage levels, three of said pulse sequences being constantly connected to back electrodes and the other pulse sequences being connected to forward electrodes pursuant to indicia being represented; the improvement comprising: said three pulse sequences connected to the back electrodes being identical to each other during a time interval but being phase-displaced relative to each other by one-third of the control period, said three pulse sequences rising and falling in uniform sequential equal steps being extreme voltage level values; at least five pulse sequences being provided for said forward electrodes for actuation thereof, three of said last-mentioned pulse sequences being identical to each other during a time interval but being phase-displaced relative to each other by



one-third of the control period and having alternatingly opposite paired extreme voltage level values, each said pair being separated through a voltage level deviating by a level step from its extreme values and of which two further pulse sequences are binary pulse sequences having a pulse sequence period of one-third of the control period, one said binary pulse sequence alternating between the two extreme values and the other binary pulse sequence alternating between the two other level stages.

4,333,099

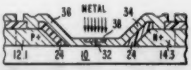
USE OF SILICIDE TO BRIDGE UNWANTED POLYCRYSTALLINE SILICON P-N JUNCTION

Donald J. Tanguay, Hightstown, and Charles E. Weitzel, Plainsboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 881,255, Feb. 27, 1978, abandoned. This application Feb. 4, 1980, Ser. No. 118,089

Int. Cl.³ H01L *29/04, 23/48*

U.S. Cl. 357—67 **10 Claims**



1. In an integrated complementary MOS circuit having a first MOS device with a pair of first conductivity type active areas and a second MOS device with a pair of second conductivity type active areas; the improvement comprising:

a doped polysilicon line interconnecting one of the first conductivity type areas of the first MOS device with one of the second conductivity type areas of the second MOS device;

the polysilicon line being doped to either the first or second conductiviy type or doped to the first conductivity type over part of its length and doped to the second conductivity type over the remainder of its length, whereby an undesired junction is formed either at the point of contact of the doped polysilicon line and the second conductivity type area of the second MOS device or at the point of contact of the doped polysilicon line with a region of one of the first or second MOS devices or at the point of

contact of the two differently doped lengths of the polysilicon line; and

means forming a metal silicide at the location of the undesired junction for providing a low resistance conductive path thereacross to eliminate the effect of the undesired junction.

4,333,100

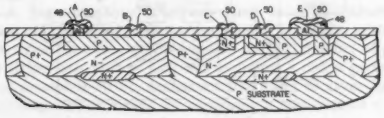
ALUMINUM SCHOTTKY CONTACTS AND SILICON-ALUMINUM INTERCONNECTS FOR INTEGRATED CIRCUITS

William R. Morcom, Melbourne Beach; Hugh C. Nicolay, Melbourne Village, and Jeffrey D. Peters, Palm Bay, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed May 31, 1978, Ser. No. 911,558

Int. Cl.³ H01L *23/48, 29/46, 29/54*

U.S. Cl. 357—71 **9 Claims**



1. An integrated circuit comprising:

a silicon wafer coated on one surface with a silicon oxide;

heavily doped N conductivity type regions in said surface having a depth of less than one micron;

lightly doped N conductivity type regions in said surface;

P conductivity type regions in said surface;

Schottky contacts to a portion of selected lightly doped N conductivity type regions through apertures in said oxide, each Schottky contact includes a layer of aluminum on said lightly doped N conductivity type regions;

ohmic contacts to a portion of selected heavily doped N conductivity type regions through apertures in said oxide, each ohmic contact includes a layer of silicon doped aluminum on said heavily doped N conductivity type region; and

interconnects selectively connecting said contacts, said interconnects includes a layer of silicon doped aluminum forming dual layer Schottky contact and single layer ohmic contacts.

4,333,101

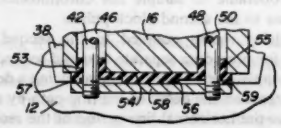
SEMICONDUCTOR HEAT SINK MOUNTING ASSEMBLY

Robert A. York, Dillsburg, Pa., assignor to Flight Systems, Inc., Mechanicsburg, Pa.

Continuation-in-part of Ser. No. 58,055, Jul. 19, 1979, abandoned. This application Sep. 18, 1980, Ser. No. 188,202

Int. Cl.³ H01L *23/48, 29/44, 23/42*

U.S. Cl. 357—79 **8 Claims**



1. A heat sink for an electric device in a vehicle control system comprising first and second heat sink blocks of thermally conductive material, said blocks having opposed parallel faces for clamping an electronic device therebetween, said blocks having horizontally disposed flanges on the lower ends thereof, a first clamping means of electrical insulating material, said first clamping means being longer than each flange, overlying each flange and constituting a spacer between said blocks, said first clamping means having fastener means for securing said blocks to a base plate, a hold down spring overlying said first clamping means and coupled to each fastener means, a second clamping means extending between said blocks for forcing said faces in a direction toward one another, said second clamping means being electrically insulated from one of said blocks.

4,333,102

HIGH PERFORMANCE SEMICONDUCTOR COMPONENT WITH HEAT DISSIPATING DISCS CONNECTED BY BRUSHLIKE BUNDLES OF WIRES

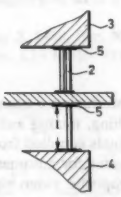
Alfred Jester, Speyer; Elmar Mueller, Alzey, and Hubert Holick, Lampertheim, all of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

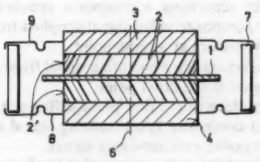
Filed Dec. 18, 1979, Ser. No. 104,890

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855493

Int. Cl.³ H01L *23/48, 29/40, 23/02*

U.S. Cl. 357—81 **7 Claims**





1. A high-performance semiconductor component with a semiconductor disc, having at least one pn-junction, with thermically and electrically conductive heat dissipating discs in the main current and thermal paths connected to the corresponding contact surfaces of said semiconductor disc by means of equally thermically and electrically conductive disc-shaped metal contacts, each metal contact consisting of a brushlike bundle of individual wires, each of said wires being coated with a suitable insulating material and bonded individually to said semiconductor disc and said heat dissipating discs, respectively, and an insulating housing surrounding the disc-rim of said semiconductor disc, wherein the improvement comprises:

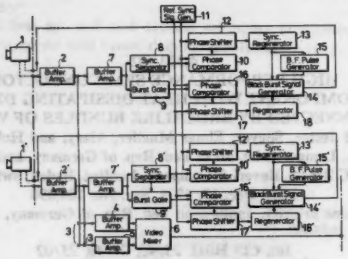
each bundle is pre-twisted in relation to a geometric central axis running vertically to the main two surfaces of said semiconductor disc and at least some of said individual wires are longer than the length corresponding to the distance between the two disc surfaces of the metal contact.

4,333,103

AUTOMATIC PHASE ADJUSTING APPARATUS FOR TELEVISION CAMERAS

Yoshinori Koiwa; Daishiro Oka, and Shoroku Takeda, all of Hinoshi, Japan, assignors to Asaka Company Limited, Tokyo, Japan

Filed Aug. 21, 1980, Ser. No. 180,173
Claims priority, application Japan, Oct. 9, 1979, 54-130192
Int. Cl.³ H04N 9/46, 5/04
U.S. Cl. 358—19 2 Claims



1. In a system for producing a composite video signal for broadcasting by switching, mixing and composing a plurality of composite video signals supplied from a plurality of television cameras, an apparatus for automatically adjusting phases of the plurality of composite video signals comprising commonly for the plurality of television cameras

a circuit for generating a reference composite synchronizing signal and a reference subcarrier signal; and

for the respective television cameras

a circuit for separating a composite synchronizing signal from the composite video signal supplied from the related television camera at a cross point;

a circuit for separating a burst flag signal from the composite video signal at the cross point;

a circuit for detecting a first phase difference between said separated composite synchronizing signal and the reference composite synchronizing signal;

a circuit for shifting the phase of the reference composite synchronizing signal in accordance with the detected first phase difference in such a manner that the detected first phase difference becomes a predetermined value;

a circuit for detecting a second phase difference between said extracted burst flag signal and the reference subcarrier signal;

a circuit for shifting the phase of the reference subcarrier signal in accordance with the detected second phase difference in such a manner that the detected second phase difference becomes a predetermined value;

a circuit for deriving a burst flag signal from the phase shifted reference subcarrier signal, said burst flag signal having a corrected phase relation with respect to the phase shifted reference composite synchronizing signal; and

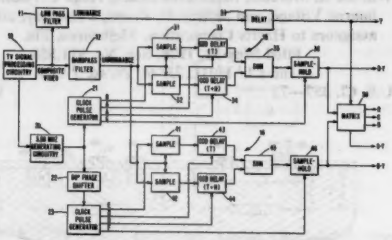
a circuit for combining the derived burst flag signal and the phase shifted reference composite synchronizing signal to generate a synchronous coupling black burst signal to be supplied to the related television camera.

4,333,104

COLOR DEMODULATING APPARATUS WITH CROSS-COLOR CANCELLATION

William L. Geller, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 17, 1980, Ser. No. 130,944
Int. Cl.³ H04N 9/535
U.S. Cl. 358—23 6 Claims



1. In a television receiver producing a composite video signal, color demodulating apparatus including

filter means for separating the chrominance signal from the other components of the composite video signal;

clock means for producing first clock pulses at the color subcarrier frequency and second clock pulses at the color subcarrier frequency with a phase shift of 90° with respect to the first clock pulses;

a first channel comprising

first sampling means coupled to the filter means and to the clock pulse means, said first sampling means being operable to sample the chrominance signal in response to the first clock pulses;

first delay means coupled to the first sampling means for providing separate first and second paths for each sample, the second path introducing a delay which is greater than the delay of the first path by an amount equal to the horizontal line period of the receiver;

first summing means coupled to the first delay means for adding the samples from the first path to the samples from the second path to produce a series of output pulses;

first output filtering means coupled to the first summing means for producing a continuous first color video signal from the series of output pulses from the first summing means;

a second channel comprising

second sampling means coupled to the filter means and to the clock pulse means, said second sampling means being operable to sample the chrominance signal in response to the second clock pulses;

second delay means coupled to the second sampling means for providing separate first and second paths for each sample, the second path introducing a delay which is greater than the delay of the first path by an amount equal to the horizontal line period of the receiver;

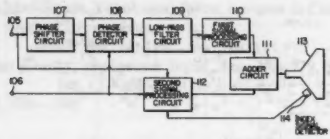
second summing means coupled to the second delay means for adding the samples from the first path to the samples from the second path to produce a series of output pulses;

second output filtering means coupled to the second summing means for producing a continuous second color video signal from the series of output pulses from the second summing means.

4,333,105
BEAM-INDEXING COLOR TELEVISION RECEIVER

Masaro Kaku, Ebina; Kunio Ando, Yokohama; Toyota Honda, Yokohama, and Fumio Inoue, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,895
Claims priority, application Japan, Aug. 22, 1979, 54-106077; Apr. 23, 1980, 55-52955
Int. Cl.³ H04N 9/24
U.S. Cl. 358—67 8 Claims

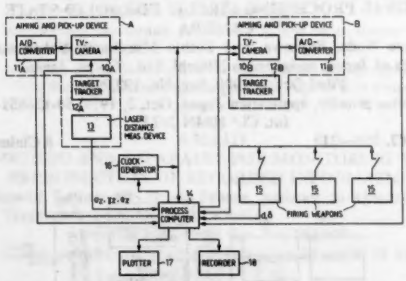


1. A beam-indexing color television receiver including a picture tube having a phosphor screen provided with one index stripe for every predetermined integral number of phosphor stripe sets, each of said sets including a red, a green and a blue phosphor stripe, said color television receiver further comprising circuit means for supplying a bias current to said picture tube only upon detection of a chrominance signal within a predetermined hue range around a specific chrominance signal corresponding to the phosphor stripe disposed in the middle between said index stripes.

4,333,106
METHOD OF MEASURING FIRING MISSES AND FIRING MISS-MEASURING INSTALLATION FOR THE PERFORMANCE OF THE METHOD

Günter Löwe, Weilerhohn, 5204 Lohmar 21, Fed. Rep. of Germany, assignor to Günter Löwe, Lohmar, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,169
Claims priority, application Switzerland, May 4, 1979, 4181/79
Int. Cl.³ H04N 7/18; F41G 3/08
U.S. Cl. 358—107 1 Claim

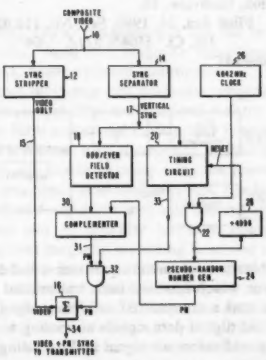


1. A firing miss-measuring installation for measuring firing misses during firing at a movable airborne target, comprising:
a first television camera having a television screen and serving for tracking the movable airborne target;
a weapon for firing a projectile at the target, with a target line prevailing between said weapon and said target;
said target line having an azimuth angle and an elevation angle;
azimuth and elevation coding devices for measuring said azimuth angle and said elevation angle of said target line;
a distance measuring device for determining the distance between the target and a weapon;
a process computer operatively connected with the coding devices and the distance measuring device, in order to computate said azimuth angle, said elevation angle and said distance between the weapon and the target;
a second television camera having a screen and arranged at an exactly measured distance from the first television camera;
a respective target tracking device for aiming both of the television cameras at the target;
analogue-digital converter means for converting to digital form the distance between the target and the projectile appearing at the television screens of both television cameras; and
process computer means for computating the distance between the target and the projectile from a two-dimensional distance appearing at both television screens.

4,333,107
JAM-RESISTANT TV SYSTEM

Kenyon E. McGuire, Somerville, and Stanley S. Brokl, Somerset, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 3, 1979, Ser. No. 35,771
Int. Cl.³ H04N 7/16
U.S. Cl. 358—120 10 Claims

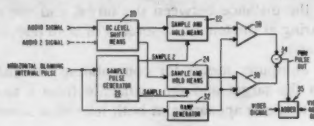


1. A jam-resistant TV transmission system, comprising
transmitter means to transmit a composite video signal in which each vertical synchronizing pulse is replaced by a synchronizing signal of several symbols from a pseudo-random number (PN) generator, several symbols occurring with increasing phase delays relative to the vertical synchronizing pulse, and
receiver means for said transmitted signal, including
a correlator receptive to said sequential symbols and containing a predetermined one of said symbols as a reference, and producing a correlation pulse when the correlator receives a symbol which is the same as the reference, and
synchronization reconstituting means responsive to the correlation pulse and the known phase delay of the predetermined symbol in the sequence of symbols to produce a reconstituted vertical synchronizing pulse for synchronizing the received video.

4,333,108
APPARATUS AND METHOD FOR TRANSMITTING A PULSE WIDTH MODULATED AUDIO SIGNAL ON A VIDEO SIGNAL

Ronald Quan, and John O. Ryan, both of Cupertino, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Mar. 10, 1980, Ser. No. 129,060
Int. Cl.[3] H04N 7/00
U.S. Cl. 358—145 15 Claims



1. A system for transmitting an audio signal in pulse modulated form on a video signal during a horizontal blanking interval thereof, comprising:

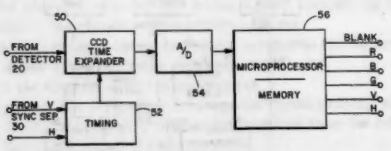
means for periodically generating an output pulse whose leading edge varies in time with respect to a reference edge of said horizontal blanking interval as a function of the voltage level of said audio signal at a first point in time, and whose trailing edge varies in time with respect to a reference edge of said horizontal blanking interval as a function of the voltage level of said audio signal at a second point in time; and

means for adding said output pulse to the video signal during said horizontal blanking interval.

4,333,109
INTELLIGENT TELETEXT DECODER

Walter S. Ciciora, Park Ridge, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 24, 1980, Ser. No. 114,930
Int. Cl.[3] H04N 5/14, 7/04
U.S. Cl. 358—147 12 Claims



1. A combination automatic equalization and decoder system for a receiver which receives both transmitted digital format data signals and a transmitted reference signal, said system equalizing said digital data signals according to the distortion exhibited by said reference signal and decoding said data signals, comprising:

a time base expander having an input for receiving and moving said digital format data signals at a selectable rate to an output;

means including a microprocessor for determining the distortion exhibited by said reference signal and for operating on data signals inputted thereto to remove distortions therefrom based on said reference signal distortion;

means coupling said time base expander output to the input of said microprocessor; and

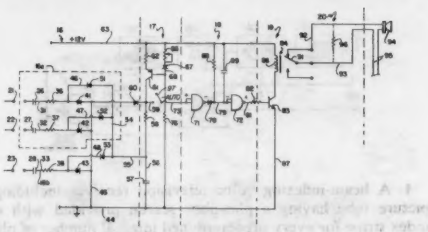
timing circuit means controllingly coupled to said time base expander and coupled to said microprocessor for regulating the rate at which said time base expander moves the data, said timing circuit means causing said time base expander to receive said transmitted digital format data signals at a first rate and later causing said data signals to move to said output at a slower second rate;

said microprocessor including means decoding and outputting said data signals.

4,333,110
TELEVISION EDITING SYSTEM

Nelson A. Faerber, 900 Sixth Ave., Ste. 101, Naples, Fla. 33940, and Edgar L. Bonner, Rte. 4, Box 101B, Taylorsville, N.C. 28681

Continuation-in-part of Ser. No. 38,378, May 11, 1979, Pat. No. 4,259,689. This application Mar. 30, 1981, Ser. No. 248,984
Int. Cl.[3] H04N 5/48
U.S. Cl. 358—165 27 Claims

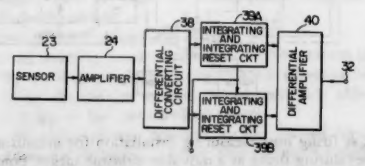


1. A television editing system comprising, in combination, control means for controlling the audio output of a video apparatus, video signal detecting means, means for coupling said video signal detecting means to a video circuit of said video apparatus for receiving the video signal in said video apparatus, monitoring means coupled to said video signal detecting means for monitoring the video signal received by said video signal detecting means to provide an output voltage signal indicating absence of picture information in the video signal at least for a predetermined period of time during the interval between program material and commercial material, responsive means coupled between said control means and said monitoring means for responding to the output voltage signal to actuate said control means for controlling the audio output of said video apparatus, and means coupled to said control means and responsive to an external recall signal for deactuating said control means upon receipt of the external signal.

4,333,111
SIGNAL PROCESSING CIRCUIT FOR SOLID-STATE CAMERA

Masaru Noda, Fujisawa, and Toshio Murakami, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 192,999
Claims priority, application Japan, Oct. 3, 1979, 54-126851
Int. Cl.[3] H04N 3/15
U.S. Cl. 358—213 8 Claims



1. A signal processing circuit for use in a solid-state camera having a solid-state image sensor for converting picture elements composing an optical image to electrical signals, the circuit comprising:

means for sequentially sensing the electrical signals representing the picture elements output of said solid-state image sensor;

means for converting the output signal of said sensing means into a first and a second signal which are respectively in

phase with and opposite phase to the output signal of said sensing means;

first and second integrators for integrating said first and second signals for each picture element respectively; and

a differential amplifier for producing an output signal representing a difference between two outputs of said first and second integrators as a video signal.

4,333,112

IMAGE SCANNING APPARATUS AND METHOD

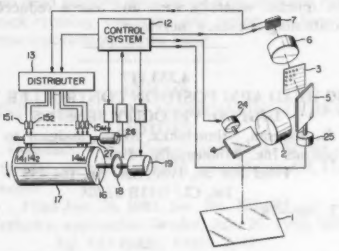
Kazuya Matsumoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1980, Ser. No. 111,973

Claims priority, application Japan, Jan. 20, 1979, 54-5816

Int. Cl.³ H04N *1/22, 1/40, 1/10*

U.S. Cl. 358—298 **7 Claims**



1. A method of scanning and detecting image with high resolution comprising the steps of:

detecting an element image which comprises points at a pitch t times larger than the desirable resolution point pitch in a first direction and at a pitch s times larger than the same desirable resolution point pitch in a second direction by two-dimensional sensing means;

transferring the detection signals together to a memory part to store the signals therein;

effecting a relative movement between said two-dimensional sensing means and said image by an amount corresponding to one desirable resolution point;

transferring the signals previously stored to an output part sequentially; and

scanning the entire image with high resolution by repeating the above cycle of steps sequentially up to t×s times.

4,333,113

METHOD AND APPARATUS FOR MONITORING THE REPRODUCTION OF RECORDED INFORMATION

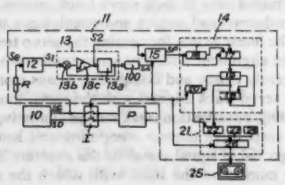
Richard Kalinowski, Brest, France, assignor to Quadrivium Techniques Avancees, Paris, France

Filed Jun. 16, 1980, Ser. No. 160,007

Claims priority, application France, Jun. 18, 1979, 79 15535

Int. Cl.³ G11B *5/02*

U.S. Cl. 360—27 **10 Claims**



1. A method for monitoring the reproduction of an audio information recorded on at least one track of a first recording medium, comprising the steps of recording in superimposition on said at least one track of said first recording medium an audio information signal and an auxiliary information signal, said auxiliary information signal being a coded digital signal derived from a pilot frequency in a limited frequency range outside the spectrum of audible frequencies towards the ultrasounds; detecting, in the course of reading the information recorded on said at least one track, the presence of at least one auxiliary information signal representing, in coded form, auxiliary information associated with the principal audio information; separating said auxiliary information signal from said audio information signal; and rerecording said separated auxiliary information signal on a second recording medium.

4,333,114

RECORDING CIRCUIT EMPLOYING AC BIASING SYSTEM

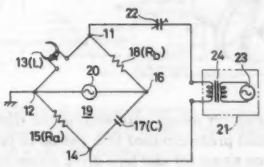
Hajime Ohta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 4, 1979, Ser. No. 100,140

Claims priority, application Japan, Dec. 6, 1978, 53-151438

Int. Cl.³ G11B *5/47, 5/02*

U.S. Cl. 360—66 **4 Claims**



1. A recording circuit arrangement for use in driving a magnetic recording head in a magnetic recording apparatus employing an AC biasing system, comprising:

a bridge circuit including said magnetic recording head, a first resistor, a capacitor and a second resistor connected in series to form a diamond having four junctions having a first and a second pair of opposite junctions, said first pair of opposite junctions comprising the junction of said magnetic recording head and said first resistor, and the junction of said capacitor and said second resistor, and said second pair of opposite junctions comprising the junction of said magnetic recording head and said second resistor, and the junction of said first resistor and said capacitor, said bridge circuit satisfying the condition Ra·Rb=L/C, wherein Ra and Rb represent resistance values of the first and second resistors, respectively, L represents inductance value of the magnetic recording head, and C represents capacitance value of the capacitor;

a recording signal generating circuit for generating a recording signal to be recorded by said magnetic recording apparatus, said recording signal being applied across said first pair of opposite junctions of said bridge circuit; and

an AC biasing signal generating circuit for generating an AC biasing signal to be used by said magnetic recording apparatus in recording said recording signal, the AC biasing signal being applied across the second pair of opposite junctions of said bridge circuit.

4,333,115

TAPE TRANSPORT CONTROL SYSTEM

David L. Junio, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 14, 1979, Ser. No. 104,681

Int. Cl.³ G11B *19/06, 27/16, 15/54*

U.S. Cl. 360—74.2 **15 Claims**

1. A transport control system comprising

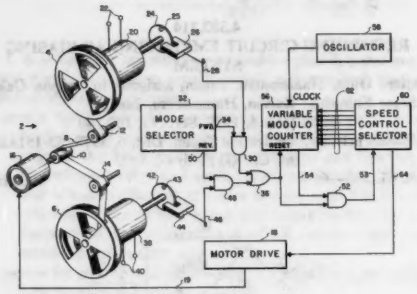
a tape drive means for driving a tape at a predetermined speed,

a tape storage reel means operatively associated with said tape drive means for supplying a tape to said tape drive means,

a transducer means arranged to produce an output signal representative of the rotational speed of said tape storage reel means,

speed control means for said drive means for producing an output signal representative of a predetermined time period corresponding to said predetermined speed of said drive means and

comparator means for comparing said output signal from



said transducer means with said output signal representative of said predetermined time period to produce a deenergization signal for said tape drive means upon the detection of a predetermined relationship therebetween, wherein said output signal from said transducer means is representative of a single rotation of said tape storage reel means and said comparator means compares the occurrence of said single rotation of said tape storage reel means with the occurrence of the end of said predetermined time period to produce said deenergization signal upon the detection of a concurrence therebetween and wherein said speed control means includes reset means for synchronizing the start of said predetermined time period with the start of said single rotation of said tape storage reel means.

4,333,116

POSITIONING DEVICE FOR A MAGNETIC HEAD OF A MAGNETIC TAPE RECORDER

Klaus Schoettle, Heidelberg; Eduard Kaemmer, Mutterstadt; Peter Dobler, Ludwigshafen; Lothar Gliniorz, Frankenthal, and Werner Hoffmann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,488

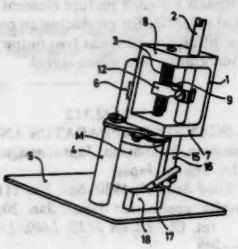
Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2918020

Int. Cl.³ G11B *21/08, 3/04, 17/32*

U.S. Cl. 360—78 **3 Claims**

1. In a positioning device for a magnetic head of a tape recorder, comprising a threaded spindle, a head carrier, and follower means and a cooperating leaf spring attached to said carrier, said threaded spindle driving said carrier by way of said follower means so that the head moves in the plane of the tape, the follower means being provided at their free end with a wedge-shaped portion and the leaf spring causing the wedge-shaped end portion to engage the thread of the spindle, the improvement

that said follower means is in the form of a single wedge-shaped follower the angle of the wedge tip of which is larger than the angle formed by the flanks of the thread of



the spindle, whereby wear and tear is reduced and the positioning accuracy increased.

4,333,117

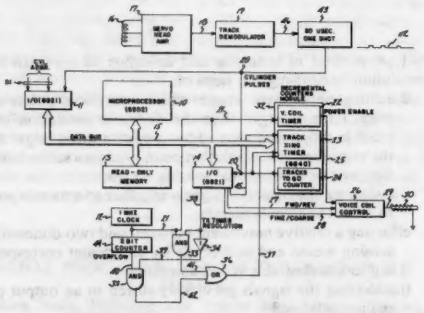
DISC HEAD ARM POSITION CONTROLLER USING DIGITAL VELOCITY SENSING

Bruce E. Johnson, Minnetonka, Minn., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Jun. 30, 1980, Ser. No. 164,435

Int. Cl.³ G11B *21/08*

U.S. Cl. 360—78 **10 Claims**



1. In a disk memory of the type having at least two rotatable disk surfaces, at least one carrying a plurality of concentric, circular, sequentially numbered servo tracks having a predetermined spacing; a carriage carrying transducer head arms and radially shifted with respect to the disk surfaces by a linear motor responsive to a motor control signal; a servo transducer head carried on a head arm in such proximity as to allow transducing of the servo information thereon when the servo disk surface is rotating; a servo signal demodulator receiving the output of the servo head and providing during radial movement of the servo head a track crossing signal comprised of cylinder pulses, each generated by the servo head's crossing of a predetermined area of each servo track; means receiving the servo transducer head output and supplying a motor control signal to the linear motor for causing the servo transducer head to maintain alignment with any servo track with which alignment currently exists; and computing means storing the number of the servo track aligned with the servo transducer head, and receiving a destination track number initiating a seek operation and responsive thereto computing and issuing an initial tracks-to-go value signal equal to the absolute difference between the number of the track with which the servo head is aligned and the destination track number and issuing a seek direction signal specifying the direction the servo transducer head must be moved to reach alignment with the destination track, wherein the invention comprises improved means for

controlling servo transducer head velocity during each seek operation, comprising:

(a) timing means receiving the track crossing signal for providing a track crossing time signal encoding in real time the time elapsed between each adjacent pair of cylinder pulses;

(b) a tracks-to-go register receiving the initial tracks-to-go value signal from the computing means and storing said value, and receiving the cylinder pulses and decrementing by one the number of tracks to go responsive to each pulse, and supplying a current tracks-to-go signal encoding the contents of the tracks-to-go register; and

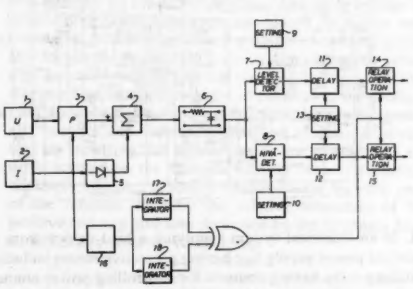
(c) velocity control means receiving the track crossing time signal, the current and initial tracks-to-go signals and the seek direction signal for supplying a motor control signal causing the servo head to move radially to a position above the track specified by the initial tracks-to-go and seek direction signals, and approximately follow a predetermined velocity function dependent on the initial tracks-to-go value, said servo head velocity determined from the time encoded in the track crossing time signal and varied as a function of the current tracks-to-go signal value.

4,333,118

LOAD INDICATORS FOR ALTERNATING-CURRENT MOTORS

Per A. P. Comstedt, Löddeköpinge, and Bo A. Elfner, Lund, both of Sweden, assignors to El-Fi Innovationer AB, Helsingborg, Sweden

Filed Jan. 26, 1981, Ser. No. 228,553
Claims priority, application Sweden, Jan. 29, 1980, 8000672
Int. Cl.³ H02H *7/085, 3/42*
U.S. Cl. 361—30 **5 Claims**



1. A load indicator for A.C. motors comprising a transmitter (2) for producing a signal representing the motor current, a transmitter (1) for producing a signal representing the motor voltage, a multiplying circuit (3) for multiplying the signals representing the motor current and the motor voltage by each other for producing a signal representing the power supplied, a circuit (5) for producing a signal representing the absolute value of the motor current, a differential circuit (4) for providing a signal representing the difference between the signal representing the power supplied and the signal representing the absolute value of the motor current, and a circuit (P1) for selecting the relative sizes of the input signals of the differential circuit in dependence on the A.C. motor connected.

4,333,119

POWER MONITOR SYSTEM

Ivar L. Schoenmeyr, Laguna Niguel, Calif., assignor to Purex Corporation, Lakewood, Calif.

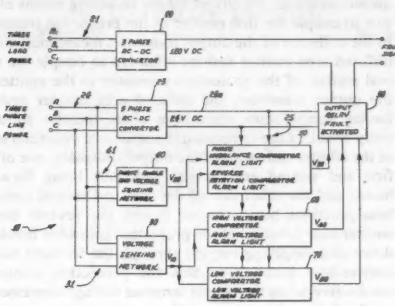
Filed Apr. 28, 1980, Ser. No. 144,425
Int. Cl.³ H02H *3/00*
U.S. Cl. 361—76 **17 Claims**

1. In apparatus to monitor electrical three-phase power, the combination comprising

(a) a three-phase voltage averaging detector to continuously monitor three-phase voltage, and to generate a DC voltage output (V_{10}) that is directly proportional to the average phase voltage, independent of phase sequence, and that is also inversely proportional to unbalance between any two phases,

(b) a high voltage comparator circuit operatively connected with the V_{10} output of the three-phase voltage averaging detector to compare said signal V_{10} with a reference signal V_{15}, thereby to produce an output signal V_{40},

(c) and a low voltage comparator circuit operatively connected with output V_{10} of the three-phase voltage averaging detector and also with a reference signal V_{16} thereby to produce an output V_{50},


THREE PHASE LOAD POWER
3 PHASE DC - DC CONVERTER
480 V DC
FAULT SIGNAL
THREE PHASE LINE POWER
3 PHASE DC - DC CONVERTER
265 V DC
OUTPUT DELAY FAULT ACTIVATED
PHASE UNBALANCE COMPARATOR ALARM LIGHT
REVERSE ROTATION COMPARATOR ALARM LIGHT
PHASE SEQUENCE AND VOLTAGE SENSING NETWORK
SENSING NETWORK
HIGH VOLTAGE COMPARATOR HIGH VOLTAGE ALARM LIGHT
LOW VOLTAGE COMPARATOR LOW VOLTAGE ALARM LIGHT

(d) and a fault-signal activator circuit coupled to V_{40} and V_{50} to produce a fault signal in the event either of V_{40} and V_{50} reaches a corresponding limit,

(e) a three-phase voltage and phase sequence detector to continuously monitor the three-phase voltage and to generate a floating reference voltage V_{20} that is proportional to the average three-phase voltage, that is also proportional to the unbalance between any two phases, and that is high for reverse rotation,

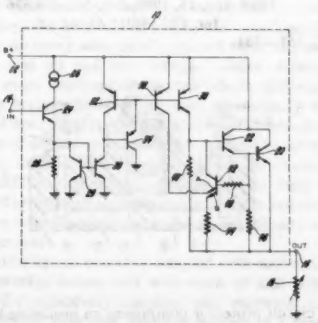
(f) and circuitry connected to receive said V_{10} and V_{20} outputs and to produce output V_{30} fed to the input of the activator circuit.

4,333,120

TRANSISTOR PROTECTION CIRCUIT

Thomas W. Kotowski, Noblesville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 27, 1980, Ser. No. 125,147
Int. Cl.³ H02H *3/38, 7/20*
U.S. Cl. 361—79 **1 Claim**



1. A bipolar monolithic integrated short circuit and overcurrent protection circuit for an output transistor having an emitter, a base and a collector, the emitter and collector being

coupled between a positive voltage terminal and an output terminal and the output transistor having temperature responsive emitter resistance that dominates the behavior of the base-emitter voltage of the output transistor under high current conditions, the protection circuit comprising:

a protection transistor having a first conductivity type collector, a second conductivity type base in contact with the collector and first and second emitters of the first conductivity type displaced from each other in contact with the base to form first and second emitter-base junctions, respectively;

circuit means effective to sense a predetermined voltage value between the positive voltage terminal and the output terminal representing a short circuit condition of the output terminal, the circuit means including means effective to couple the first emitter of the protection transistor to the collector of the output transistor, means including a diffused area emitter resistor effective to couple the second emitter of the protection transistor to the emitter of the output transistor, the diffused area emitter resistor having temperature responsive characteristics substantially equal to the temperature responsive characteristics of the emitter resistance of the output transistor, one of the first and second emitter-base junctions being forward biased and the other one of the first and second emitter-base junctions being reverse biased, the reverse biased emitter-base junction of the protection transistor breaking down and supplying current through the forward biased emitter-base junction to bias the protection transistor conductive when the output terminal voltage decreases to a value below the voltage at the positive voltage terminal by the predetermined voltage value representing a short circuit condition of the output terminal;

means effective to couple the collector of the protection transistor to shut drive signals provided to the output transistor when said protection transistor is biased conductive; and

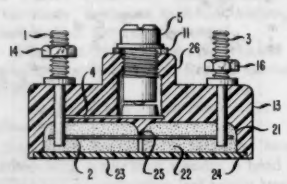
means effective for all values of voltages across the output transistor to continuously apply the voltage at the base of the output transistor to the base of the protection transistor to variably control conduction of the protection transistor to limit the current through the output transistor, whereby the current limit is varied in accord with the temperature responsive characteristics of the diffused area emitter resistor to compensate for variations in the base-emitter voltage of the output transistor due to the emitter series resistance of the output transistor.

4,333,121

FUSED STATION PROTECTOR

Alfred O. Schwarz, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 15, 1980, Ser. No. 178,526
Int. Cl.³ H02H *85/44*
U.S. Cl. 361—104 **4 Claims**



1. A circuit protector comprising an insulative base having an elongated cavity, the cavity being shaped to have a pinched portion between two end portions,

a line terminal held within the base and protruding into one end portion of the cavity,

a station terminal held within the base and protruding into the other end portion of the cavity,

a fuse wire connected between the line and station terminals within the cavity, and

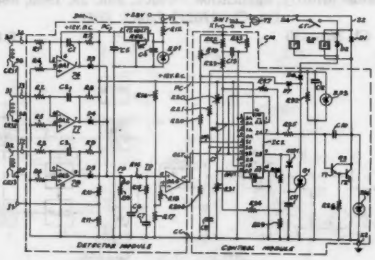
an arc-extinguishing material which fills the cavity and surrounds the fuse wire.

4,333,122

MINIMUM SIZE, INTEGRAL, A.C. OVERLOAD CURRENT SENSING, REMOTE POWER CONTROLLER

John E. Hayden, Cedarburg, and Walter L. Rutchik, Wauwatosa, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 923,325, Jul. 10, 1978, abandoned. This application Aug. 31, 1979, Ser. No. 71,726
Int. Cl.³ H02H *7/085*
U.S. Cl. 361—114 **3 Claims**



1. In an electrical system supplying a load device from an electrical power supply line having protective means including a latching relay having contacts for controlling power connection from said line to said load device, said relay having set and trip coils and a cutthroat contact in series with said trip coil that closes when said relay is set and reopens when said relay is tripped, means responsive to an overload current on the line for providing an overload trip signal, and control circuit means including a set switch and an integrated circuit dual multiplexer for controlling setting of said relay in response to a set signal provided by operation of said set switch and for controlling tripping of said relay in response to said overload trip signal, said multiplexer having first and second multiplexer inputs connected to said set switch and said overload trip signal means and associated with first and second multiplexer outputs for controlling said set and trip coils in response to said set signal and said overload trip signal, respectively, a LOW enable input for controlling said first multiplexer output, and common select inputs controlled by a combined status signal and said cutthroat contact, the improvement comprising:

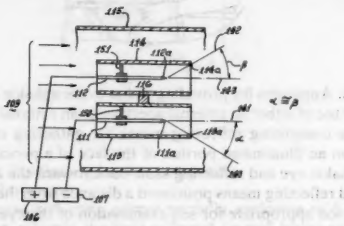
means for preventing attempted setting of said relay while said overload trip signal persists which otherwise would cause deterioration of said relay contacts comprising:

means applying said overload trip signal also to said enable input as a HIGH to inhibit said first multiplexer output thereby to prevent pulsing of said set coil by manipulation of said set switch as long as said overload trip signal persists.

4,333,123
ANTISTATIC EQUIPMENT EMPLOYING POSITIVE AND NEGATIVE ION SOURCES

R. Edward Moulden, San Gabriel, Calif., assignor to Consan Pacific Incorporated, Whittier, Calif.

Continuation-in-part of Ser. No. 135,544, Mar. 31, 1980, Pat. No. 4,319,302, which is a continuation-in-part of Ser. No. 80,272, Oct. 1, 1979, abandoned. This application May 27, 1980, Ser. No. 153,257
The portion of the term of this patent subsequent to Mar. 9, 1999, has been disclaimed.
Int. Cl.³ H05F 3/06
U.S. Cl. 361—213 23 Claims

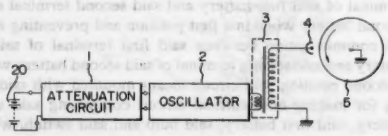


1. In apparatus for generating and dispersing ions,
(a) first and second tip means aimed generally longitudinally forwardly, said first tip means spaced laterally from said second tip means,
(b) a circuit means to supply high voltage of relatively positive polarity to the first tip means and high voltage of relatively negative polarity to the second tip means, and
(c) insulative structure including a barrier extending generally forwardly to separate positive ions dispensed generally forwardly of the first tip means from negative ions dispensed generally forwardly of the second tip means,
(d) said insulative structure forming first and second generally parallel and forwardly directed recesses receiving said tip means so that the tip means are substantially entirely located in the recesses, the tip means effectively relatively adjusted spacially relative to the forward ends of the recesses whereby the relative intensities of the positive and negative ions dispersed by the tip means have an adjustably selected relationship.

4,333,124
ELECTRICALLY DISCHARGING METHOD AND DEVICE

Yasuyuki Tamura; Kimio Nakahata, and Masato Ishida, all of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 840,158, Oct. 7, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 75,969
Claims priority, application Japan, Oct. 18, 1976, 51-124543
Int. Cl.³ H01T 19/00
U.S. Cl. 361—214 6 Claims

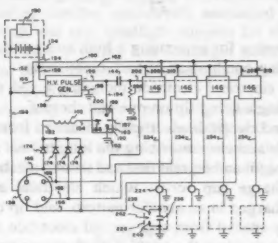


1. An image formng method comprising the steps of:
electrically charging a recording medium to form an image thereon;
transferring the image on the recording medium onto a transfer medium;
electrically discharging the electric charge on the recording medium by applying a given AC voltage to an AC corona discharger after completion of the transfer operation to remove the residual charge on the recording medium; and
gradually attenuating the AC voltage applied to said AC corona discharger, when the discharge of the residual charge is terminated, until it becomes zero.

4,333,125
COMBUSTION INITIATION SYSTEM

George H. Hensley, Star Route Box 150L, Alameda, N. Mex. 87114, and Raymond E. Hensley, 3805 Garcia Northeast, Albuquerque, N. Mex. 87111

Filed Feb. 8, 1980, Ser. No. 119,869
Int. Cl.³ F23Q 3/00; H01T 13/00
U.S. Cl. 361—257 56 Claims



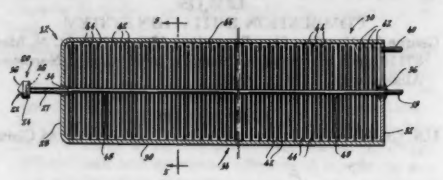
35. A system for sequentially initiating combustion of a plurality of predefined quantities of fuel, comprising:
high voltage generating means adapted to be operably coupled with a source of electrical energy for producing a high electrical voltage;
electrical energy storage means operably coupled with said high voltage generating means for storing a predetermined quantity electrical energy;
a plurality of combustion initiation devices respectively associated with said plurality of said predefined quantities of fuel and spaced distal from said energy storage means, each of said devices including a capacitive portion for storing said predetermined quantity of electrical energy therein and an electrode portion formed integral with said capacitive portion, each said devices being operable to produce a high energy plasma jet for initiating combustion of the corresponding quantity of fuel, the electrode portion of each of said devices comprising a first electrode including a rod shaped member having a tip on one end thereof and a second electrode electrically insulated from said first electrode and including an annular portion circumscribing the longitudinal axis of said rod shaped member, said tip being substantially spaced from said annular portion, said tip and said annular portion defining an annular space therebetween across which electrical current may be transferred to produce an annularly shaped electrical discharge, the longitudinal spacing between said tip and said annular portion being sufficient to allow said discharge to generate a generally cylindrical electromagnetic field enveloping said discharge, said field being sufficient in strength to temporarily radially restrain said discharge whereby to increase the energy density of said discharge; and
timing control means operably coupled with said electrical energy storage means and with each of said initiation devices for selectively coupling said electrical energy storage means with said initiation devices in a predetermined timed sequency whereby to sequentially deliver said predetermined quantity of electrical energy from said storage means to individual ones of said capacitive portions of said initiation devices.

4,333,126

COMBUSTION INITIATION DEVICE

George H. Hensley, Star Rte. Box 150L, Alameda, N. Mex. 87114, and Raymond E. Hensley, 3805 Garcia Northeast, Albuquerque, N. Mex. 87111

Filed May 30, 1980, Ser. No. 154,959
Int. Cl.³ H01T *13/00*
U.S. Cl. 361—257 23 Claims



1. A device for generating a high energy plasma jet for use in initiating combustion of fuel, comprising:

a first electrical electrode including a rod shaped member having a firing tip on one end thereof;

a second electrode electrically insulated from said first electrode and circumscribing the longitudinal axis of said rod shaped member, said first and second electrodes defining a discharge gap across which electrical energy may be discharged in an annular pattern, said tip being longitudinally spaced from said second electrode a sufficient distance to allow the annular discharge to generate a generally cylindrical electromagnetic field surrounding said discharge and sufficient in strength to temporarily radially confine said discharge; and,

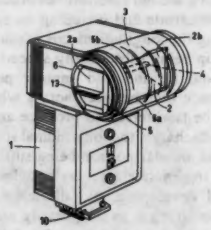
a capacitive portion including a first and second plurality of spaced apart capacitive elements alternately disposed with respect to each other and respectively connected to said first and second electrodes.

4,333,127

ELECTRONIC FLASHGUN

Frederik H. Alkema, and Meerten Luursema, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,438
Claims priority, application Netherlands, Oct. 18, 1979, 7907685
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—17 6 Claims



1. An electronic flashgun which comprises: a case having an elongate generally concave reflector mounted for rotation about a longitudinal axis, end partitions disposed at the axial extremities of said reflector which extend substantially transverse to said axis, a flash discharge lamp disposed in said reflector, characterized in that one of said end partitions is provided with a slot disposed for mounting an effect filter immediately in front of said reflector and said flash tube.

4,333,128

MIRROR FOR THE APHAKIC EYE

Francis D. Moore, 66 Heath St., Brookline, Mass. 02146

Filed Aug. 11, 1980, Ser. No. 176,672
Int. Cl.³ E21V *33/00*
U.S. Cl. 362—135 9 Claims

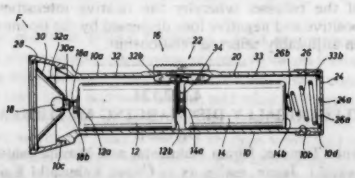
1. Apparatus for providing vision to the aphakic eye without the use of either an external aperture or an external transparent lens comprising reflecting means for gathering rays of light from an illuminated portion of the face of a person having an aphakic eye and reflecting same back toward the aphakic eye, said reflecting means positioned a distance from the face of said person appropriate for self examination of the eye and for the insertion, removal, and adjustment of a contact lens, and the curvature of said reflecting means selected in relation to the distance of the image from the reflecting means to cause rays of light emanating from said eye to form, when modified by the combined refraction of the epithelium and cornea and vitreous humor of said eye, an image at the retina of said aphakic eye, whereby said aphakic eye perceives an image of itself.

4,333,129

FLASHLIGHT WITH BATTERY SEPARATOR

Charles W. Ewing, 7923 Portal, Houston, Tex. 77017

Filed Jul. 28, 1980, Ser. No. 172,760
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—205 6 Claims



1. A flashlight comprising a flashlight housing, a bulb mounted with said housing, a first battery and a second battery mounted within said housing, each battery with a first terminal and a second terminal, said first and second terminals being of opposite charge, a first switch means mounted with said housing for allowing electrical communication between said first terminal of said first battery and said second terminal of said second battery when in a first position and preventing electrical communication between said first terminal of said first battery and said second terminal of said second battery when in a second position, and circuit means mounted with said housing for making an electrical circuit comprising said second battery, said first battery, said bulb and said switch, wherein the improvement comprises:

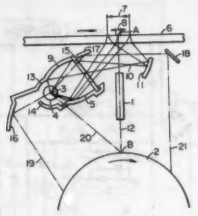
a second switch means mounted within said flashlight for separating said second terminal of said first battery from said first terminal of said second battery when in a second position and allowing electrical communication between said second terminal of said first battery and said first terminal of said second battery when in a first position.

4,333,130

SLIT ILLUMINATING DEVICE

Noritaka Mochizuki, Yokohama, and Atsushi Kubota, Komae, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,580
Int. Cl.[3] F21V *7/02, 9/00, 29/00;* G03B *27/54*
U.S. Cl. 362—293 17 Claims



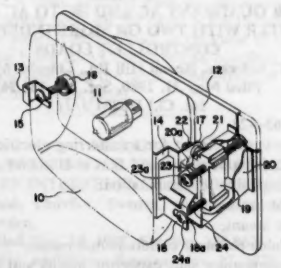
1. A slit illuminating device, comprising:
(a) a light source;
(b) a lower reflecting mirror partially enclosing said light source, wherein the light reflected by said lower reflecting mirror broadly illuminates the slit with divergent light rays;
(c) an upper reflecting mirror partially enclosing said light source, wherein the light reflected by said upper reflecting mirror is reflected as convergent light rays; and
(d) a third reflecting mirror, said third mirror being positioned on the opposite side of a light path extending from the slit to an image forming element than said light source, wherein the reflected light from said upper reflecting mirror is reflected by said third reflecting mirror to broadly illuminate said slit with divergent light rays.

4,333,131

HEADLIGHT MOUNTING AND ADJUSTMENT MECHANISM

Yoshio Hujimoto, Hiroshima; Tadashi Kochi, Fuchu, and Shigeru Furuya, Yokohama, all of Japan, assignors to Toyo Kogyo Co., Ltd., Aki and Stanley Electric Co., Ltd., Tokyo, both of, Japan

Filed May 2, 1980, Ser. No. 146,119
Claims priority, application Japan, May 10, 1979, 54-62211[U]
Int. Cl.[3] F21V *19/02*
U.S. Cl. 362—372 7 Claims



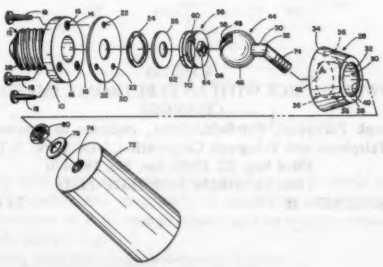
1. A headlight mounting and adjustment mechanism comprising:
a headlight assembly for housing an electric light which when energized emits a beam of light in a direction;
a headlight support fixedly positioned with respect to said headlight assembly;
a first connecting means operatively associated with a first portion of said headlight assembly and said headlight support for pivotally connecting said headlight assembly to said headlight support;
a sliding block supported for movement toward and away from said headlight support and between first and second positions;
a guide means fixedly connected to said headlight support for slidably supporting said sliding block during movement between said first and second positions;
a second connecting means operatively associated with a second portion of said headlight assembly and said sliding block for rotatably mounting said headlight assembly on said sliding block and for rotatably supporting said headlight assembly relative to said sliding block about an axis extending between the pivotal connection of said headlight assembly to said headlight support and the rotatable mount of said headlight assembly to said sliding block;
a first adjusting member operatively associated with said sliding block and said headlight support for sliding said sliding block for pivoting said headlight assembly about the pivotal connection of said headlight assembly to said headlight support; and
a second adjusting member operatively associated with a third portion of said headlight assembly and said sliding block for varying the distance between said third portion and said sliding block for rotating said headlight assembly about said axis.

4,333,132

SWIVEL UNIT FOR ADJUSTABLE LIGHTING FIXTURE

Gary Paley, Cornwall-On-Hudson, N.Y., assignor to Square D Company, Palatine, Ill.

Filed May 10, 1979, Ser. No. 37,623
Int. Cl.[3] F21M *3/18*
U.S. Cl. 362—421 15 Claims



1. An environmentally sealed and manually controlled swivel unit comprising:
a base for establishing electrical and mechanical connection with a source of electrical power;
a housing having a central housing bore defining an inner surface, said housing having a first end for attachment to said base and a second end having an internal shoulder, said housing also having a guide pin extending radially inward a predetermined distance from said inner surface near said first end;
a swivel ball device having a spherical body with a predetermined rectangular cavity and a tube extending from said spherical body opposite said cavity, said tube having a predetermined bend and said spherical body having a tunnel connecting said tube to said cavity, said spherical body also having a predetermined diameter substantially equal to the diameter of said central bore in said housing, said swivel ball being contained inside of said housing adjacent said shoulder on said second end of said housing;
a swivel ball controller having first and second circular rims spaced apart a predetermined distance and connected by a circular body member, said controller also having a

square cavity guide extension centrally located on said first rim opposite said body member, said first and second rims, said body member and said cavity guide extension having a central controller bore, said swivel ball controller also having a stop wall extending between said first and second rims and also extending from the edge of said rims to said circular body member, said first and second rims having a diameter substantially equal to said diameter of said central housing bore in said housing and said circular body member having a diameter less than the diameter of said rims, said swivel ball controller being located in said central housing bore near said first end such that said cavity guide extension rides in said cavity in said swivel ball device and said guide pin in said housing rides between said first and second rims,

a tension means for forcing said swivel ball controller against said swivel ball device and for forcing said swivel ball device against said shoulder of said housing thereby defining a predetermined lamp-holding force, said tension means being located between said swivel ball controller and said base when said base is attached to said first end of said housing,

wherein said swivel ball controller allows said swivel ball device to rotate about a first axis and to rotate about a second axis perpendicular to said first axis, and also wherein said swivel ball device and said shoulder on said housing form an environmentally sealed juncture, and further wherein said predetermined lamp holding force retains said swivel ball device at any selected position while allowing easy manual movement of said swivel ball device.

4,333,133

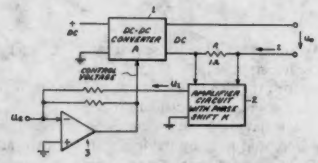
POWER SOURCE WITH AN ELECTRONIC IMPEDANCE CHANGER

Joseph Pernyeszi, Fairfield, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,470

Int. Cl.³ H02M *3/00*; H02P *13/18*

U.S. Cl. 363—15 **23 Claims**



1. A circuit arrangement to provide a fixed voltage source in series with an arbitrarily chosen impedance of only magnitude and phase angle comprising:

a power converter providing an output current and output voltage;

first means coupled to the output of said converter to sense said output current;

second means coupled to said first means for amplifying said sensed output current and imparting a predetermined phase shift thereto to provide a control voltage; and

third means coupled to said second means and said converter to couple said control voltage to said converter to control said output voltage thereof.

4,333,134

CONVERTERS

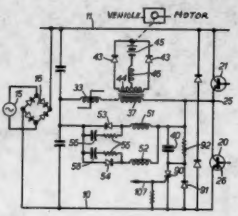
David Gurwicz, Gateshead, England, assignor to Chloride Group Limited, London, England

Filed Feb. 25, 1980, Ser. No. 124,078

Claims priority, application United Kingdom, Feb. 28, 1979, 7907036

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—17 **15 Claims**



1. A converter including D.C. input supply terminals, a load circuit including a high frequency transformer having primary and secondary windings, and an output rectifier, an oscillatory circuit including at least one capacitor and a parallel inductor connected in parallel with the primary winding of the transformer, and switching means including at least one solid state switching device, means for synchronizing the switching device to the oscillation of the oscillatory circuit for allowing the circuit to oscillate freely for part of a cycle to transfer energy from the inductor to the capacitor to charge the latter to a certain condition in which the voltage across the parallel inductor is substantial and that across the switching device is negligible and only then for connecting the parallel inductor across the D.C. input terminals whereupon the parallel inductor receives and stores energy from the said supply, and means connected in series in the load circuit for restricting load current to a low value during a part of the cycle in which the capacitor receives energy from the parallel inductor and until the capacitor is charged to the said condition and the switching means has connected the load circuit across the supply.

4,333,135

FOUR QUADRANT AC AND DC TO AC AND DC CONVERTER WITH TWO OR MORE INDEPENDENTLY CONTROLLED LOADS

Francisc C. Schwarz, Round Hill Rd., Lincoln, Mass. 01773

Filed May 21, 1980, Ser. No. 151,967

Int. Cl.³ H02M *3/315*

U.S. Cl. 363—28 **13 Claims**

1. A converter circuit for transferring electrical power between circuit input means and first and second circuit output means, comprising in combination:

capacitor means;

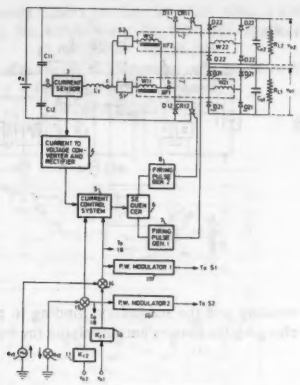
inductor means;

controllable resonant circuit switch means;

means connecting said capacitor means and said inductor means and said controllable resonant circuit switch means for forming series resonant circuit means to transfer electrical power between the circuit input means and the first and second circuit output means through resonant oscillation in said series resonant circuit means;

control means connected to said controllable resonant circuit switch means for controlling the transfer of the total

electrical power transferred between the circuit input means and the first and second circuit output means; and



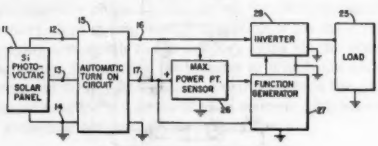
first controllable switch means connected for controlling the transfer of electrical power through the first circuit output means.

4,333,136

SOLAR POWERED AUTOMATIC TURN-ON CONTROL (SPA-TOC) UNIT AND METHOD

Richard H. Baker, 26 Wildwood Dr., Bedford, Mass. 01730

Filed Nov. 26, 1979, Ser. No. 97,205
Int. Cl.[3] H02P *13/18*; G05F *5/00*
U.S. Cl. 363—43 **27 Claims**



22. A method of controlling the application of d.c. output power of a photovoltaic solar panel to a load comprising determining whether a panel output parameter value is above or below a predetermined threshold, in response to the output parameter value being below the threshold loading the panel with an impedance that causes the panel to derive the output parameter with a value different from the parameter value at the maximum power point for the panel at the threshold while decoupling the panel from the load, in response to the output parameter value being above the threshold coupling the panel to the load while operating the panel substantially at the maximum power point for the panel.

4,333,137

THYRISTOR SWITCH WITH TRANSIENT PROTECTION AND RF INTERFERENCE SUPPRESSION

Gunnar Asplund, Ludvika, Sweden, assignor to ASEA Aktiebolag, Sweden

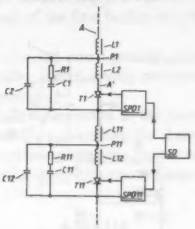
Filed Nov. 10, 1980, Ser. No. 205,852
Claims priority, application Sweden, Nov. 12, 1979, 7909314
Int. Cl.[3] H02H *7/125*
U.S. Cl. 363—54 **6 Claims**

1. In a high voltage converter valve having at least a pair of thyristors, the improvement comprising:

a first inductor serially connected in circuit with each corresponding thyristor for limiting the rate of current increase in the switch during thyristor firing;

series connected resistor and first capacitor components connected in parallel across the outward leads of each serially connected thyristor and inductor, for providing equal voltage distribution between the thyristors;

a second capacitor connected in parallel with each series connected resistor and first capacitor; and



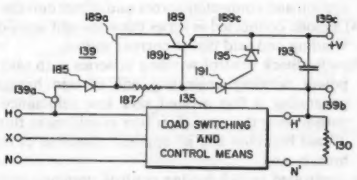
a second respective inductor connected in circuit with each corresponding first inductor and cooperating with stray capacitance for minimizing the generation of radio frequency interference signals from the switch.

4,333,138

POWER SUPPLY FOR LOAD CONTROLLER

Paul G. Huber, Pawtucket, R.I., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1980, Ser. No. 181,813
Int. Cl.[3] H02P *13/26*
U.S. Cl. 363—89 **8 Claims**



1. A power supply for providing an operating potential of a selected polarity and magnitude to apparatus connected in series between an A.C. energy source and an energy-consuming load, comprising:

an input terminal connected to said source:

a power supply output terminal;

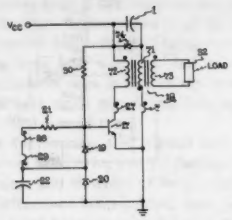
means connected between said output and common terminals for storing electrical charge;

means connected to said input terminal for charging said storage means during a half-cycle of said A.C. source having said selected polarity, said charging means including a unidirectionally-conducting element having a first electrode connected to said input terminal and a second electrode, said element being polarized to conduct only during said source half-cycle of selected polarity; means connected between said second electrode and said output terminal for providing a flow of current into said charge storing means during at least a portion of the conduction time interval of said unidirectionally-conducting element, and including a solid-state device having a controllably switchable main circuit connected between said element second electrode and said output terminal and a control electrode controlling said main circuit to conduct a flow of current therethrough responsive to a signal received thereat; and a current source connected between said element second electrode and said device control electrode for providing said signal whenever said element conducts.

4,333,139
STATIC INVERTER

Daniel V. Owen, and Alan M. Smith, both of Hendersonville, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,863
Int. Cl.³ H02P *13/20*
U.S. Cl. 363—97 **6 Claims**



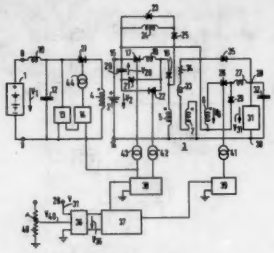
1. A static inverter comprising;
A. input terminals for connection to a direct current source,
B. inductive means comprising:
(1) a core of substantially linear magnetic material having a closed main magnetic path and including a small aperture in a segment of the said path which partitions the cross-section of said main magnetic path into two branches and creates a low reluctance closed flux path,
(2) a primary power winding encircling the full core cross-section for generating flux around said main magnetic path,
(3) a second power winding encircling the full core cross-section and connected across said direct current source,
(4) a diode connected in series between said second power winding and said direct current source,
(5) a feedback control winding in series with said second power winding encircling one of said branches for generating a flux around said low reluctance closed path having the same direction as said main flux in one of said branches and an opposite direction of the other branch, and
C. a controlled switch having control, common and output electrodes for intermittent energization of the inductive means from said direct current source, said controlled switch connected in series with said primary power winding,
whereby said feedback control winding serves to assure commutation and re-triggering of said controlled switch.

4,333,140
PULSE-CONTROLLED D-C CONVERTER WITH INDUCTIVE LOAD

Harald Heinicke, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 23, 1980, Ser. No. 189,768
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1979, 2940533
Int. Cl.³ H02M *3/315*
U.S. Cl. 363—27 **4 Claims**

1. A D-C voltage converter circuit for controlling a voltage at an output terminal for connecting an inductive load, the circuit being of the type which is provided with battery terminals for connecting a battery, a first thyristor for controlling electrical conduction from the battery terminals to a first primary winding of a pulse transformer, the pulse transformer having a secondary winding for supplying electrical energy to the output terminal, the battery responsively supplying an increased cutoff voltage for extinguishing the first thyristor, CHARACTERIZED IN THAT the pulse transformer is further provided with a second primary winding connected to an input terminal for receiving a main D-C voltage, conduction between said input terminal and said second primary winding being controllable by a second thyristor so as to cause the first

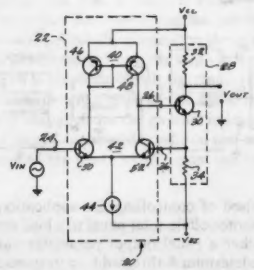


primary winding and the secondary winding to produce currents for charging the battery and supplying the inductive load.

4,333,141
FULL WAVE RECTIFIER

Katsumi Nagano, Hiratsukashi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 19, 1980, Ser. No. 188,662
Claims priority, application Japan, Sep. 25, 1979, 54-122074
Int. Cl.³ H02M *7/217*
U.S. Cl. 363—127 **3 Claims**



1. A full wave rectifier comprising:
a transistor circuit including a first transistor having a control terminal and current conducting terminals and first and second resistors each having one terminal connected to one of said current conducting terminals, respectively and another terminal connected to first and second power sources, respectively;
a current mirror having a power terminal connected to said first power source, an input terminal and an output terminal, said first transistor control terminal being connected to said output terminal;
a second transistor having a base for receiving an alternating signal to be rectified, a first current conducting terminal connected to said current mirror input terminal and a second current conducting terminal;
a third transistor having a base connected to one of said first transistor current conducting transistors, a first current conducting terminal connected to said current mirror output and a second current conducting terminal; and
a constant current source connected to said second and third transistors second current conducting terminals.

4,333,142
SELF-CONFIGURABLE COMPUTER AND MEMORY SYSTEM

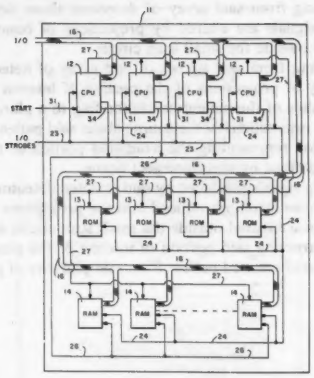
Gilman D. Chesley, 22431 Starling Dr., Los Altos, Calif. 94022

Division of Ser. No. 818,235, Jul. 22, 1977. This application Jul. 12, 1979, Ser. No. 56,909

The portion of the term of this patent subsequent to Mar. 4, 1997, has been disclaimed.

Int. Cl.³ G06F *11/04*

U.S. Cl. 364—200 **6 Claims**



1. In a self-configurable integrated circuit structure: a semiconductor wafer, a plurality of memory chips formed on the wafer, each of said memory chips having a predetermined unique address, an address table representing the addresses of all of the memory chips, a common bus for carrying signals to the memory chips during normal operation of the same, means for applying test signals to the memory chips via the common bus and means for sensing the manner in which the memory chips respond to the test signals and storing data in the address table to indicate the condition of each memory chip for subsequent automatic assignment of memory space.

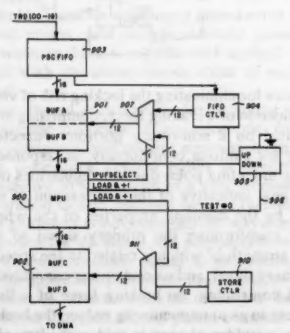
4,333,143
INPUT PROCESS SEQUENCE CONTROLLER

Powell L. Calder, Georgetown, Tex., assignor to Texas Instruments, Dallas, Tex.

Filed Nov. 19, 1979, Ser. No. 95,920

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **8 Claims**



1. A process sequence controller having a processor unit, controlled by a read-only memory for receiving data, in real time, from peripheral digital apparatus, processing the data and transmitting the processed data to a central processor, comprising:

(a) a first buffer, divided into an input buffer and a process buffer, for receiving data from the peripheral digital apparatus;

(b) a first controller, connected to the first buffer and to the processor unit for controlling the flow of the data into the first buffer and out of the first buffer into the processor unit to be processed;

(c) a second buffer divided into a process operation buffer and a store DMA buffer, for receiving processed data from the processor unit; and

(d) a second controller connected to the second buffer and to the processor unit for controlling the flow of the processed data out of the processor unit into the second buffer, and out of the second buffer into the central processor.

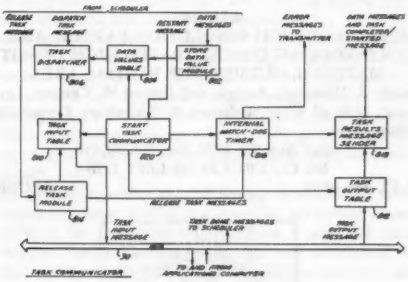
4,333,144
TASK COMMUNICATOR FOR MULTIPLE COMPUTER SYSTEM

Arliss E. Whiteside, Royal Oak; Morris D. Freedman, Southfield, both of Mich., and Ömür Tasar, Harvard, Mass., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 5, 1980, Ser. No. 118,813

Int. Cl.³ G06F *15/16, 3/00, 9/46*

U.S. Cl. 364—200 **17 Claims**



1. A task communicator for each computer in a multiple computer system wherein each computer is capable of executing an assigned set of tasks, and each computer includes means for selecting the tasks it will execute, means for scheduling for execution the selected tasks in their order of selection, and an applications computer for executing the scheduled tasks, and wherein all of the computers in the system send messages to each other, said messages containing the identity and the values of the data variables resulting from the execution of the tasks by its own applications computer and wherein said applications computer generates a task done signal when it completes the execution of each task and is ready for a new task and said means for scheduling generates sequential dispatch task signals in response to said task done signal, each of said sequential dispatch task signals containing the identity of a scheduled task in its sequential order of selection, each of said task communicators comprising:

a data value table storing the values of the data variables required for the execution of each assigned task, each data variable being generated at different times, and several values of the same data variable may be generated before a task is executed requiring an earlier generated value for that data variable, each data variable having an associated storage location in said data values table for storing at least one data value for that data variable;

store data value means responsive to the identity of the data variable contained in said messages received from all of said computers for recording in said associated storage

locations of the data values table the values of the data variables contained in said messages;

task input means interfacing said applications computer for temporarily storing a task input message containing the values of the data variables required by said applications computer for the execution of the next scheduled task;

task dispatcher means responsive to the task identified in each of said dispatch task signals for selecting from said data values table the values of the data variables required for the execution of the scheduled task identified in said dispatch task signal and for recording said selected values in said task input means to generate said task input message;

task releaser means responsive to said task done signal generated by said applications computer signifying it has completed the execution of the preceeding scheduled task for releasing said task input message stored in said task input means to said applications computer for the execution of the scheduled task;

task output means for temporarily storing the values of the data variables produced by the execution of the task currently being executed by said applications computer; and

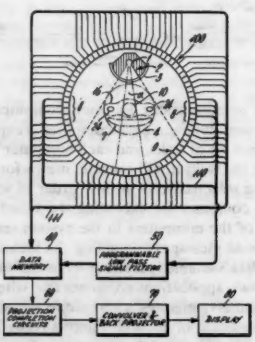
task results message sender means responsive to said task done signal generated by the applications computer signifying it has completed the execution of its current task for sending said messages to all of the computers, said messages containing the identity and values of the data variables stored in said task output means.

4,333,145

METHOD OF HIGH RESOLUTION PARTIAL AREA SCAN INVOLVING CONCENTRATED HIGH DENSITY MATERIAL OUTSIDE THE PARTIAL AREA

Dominic J. Heuscher, Aurora, and Roland W. Carlson, Lyndhurst, both of Ohio, assignors to Technicare Corporation, Solon, Ohio

Filed Nov. 29, 1979, Ser. No. 98,431
Int. Cl.³ G01N *23/00*; G01T *1/20*
U.S. Cl. 364—414 **10 Claims**



1. In a method of high resolution computed tomography scanning of a portion of a planar region of a patient such as a section of the spine by a CT scanner of the type having a scan circle defining an examination region, a rotating source of penetrating radiation movably mounted relative to said scan circle for subjecting the scan circle to radiation, an array of stationary radiation detectors coplanar with the path of the source, spaced about the axis of rotation of the source and positioned to receive at least some of the radiation that passes from said source and through the scan circle for producing signals indicative of the intensity of radiation impinging thereon, and processing means operatively connected with said detector array for reconstructing into a visual display said signals caused by radiation attenuation in the scan circle, wherein concentrated high density material such as bone tissue is situated within the planar region but outside the portion of interest, the improvement comprising:

(a) emitting a divergent beam of radiation by said rotating source at an angle sufficiently large to encompass the portion of interest of the planar region of the patient and smaller than required for subjecting the entire scan circle to radiation, the common area within the angle of the beam at different positions of the rotating source defining a small scan circle corresponding to the portion of interest;

(b) selecting from said array of detectors those detectors whose signals are altered by projections of bone tissue situated outside the small scan circle;

(c) acquiring from said signals of said array of detectors a plurality of projections of the portion of interest of the planar slice of the patient corresponding to a plurality of angular orientations of the source about said patient, each projection representing the irradiated portion of the object as defined by said divergent beam;

(d) filtering signals produced by said selected detectors so as to minimize errors introduced into the projections by the bone tissue situated outside the small scan circle; and

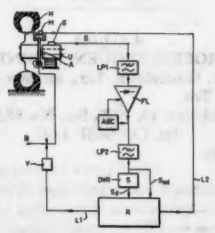
(e) reconstructing said portion of interest of the planar region of said scanned patient from said plurality of projections.

4,333,146

DEVICE FOR ELIMINATING THE VEHICLE WHEEL LOCKING RISK AT BRAKING

Brajnandan Sinha, 1 Spovgränd, S-951 47 Luleå, Sweden, and Sven-Erik Tiberg, Gammelstad, Sweden, assignors to Brajnandan Sinha, Luleå, Sweden

Filed Apr. 30, 1980, Ser. No. 145,213
Claims priority, application Sweden, May 2, 1979, 7903814
Int. Cl.³ G06G *7/70*; B60T *8/00*
U.S. Cl. 364—426 **5 Claims**



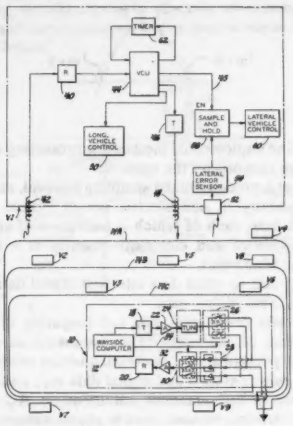
1. A device for eliminating the locking risk of vehicle wheels at the application of a braking force, comprising an accelerometer mounted on a non-rotary portion connected with the wheel axle for emitting continuously, in response to the motions of the mounting point due to irregularities of the road, a primary signal indicative of the acceleration of said point as influenced by the damping properties of the wheel tire; first means for transforming the primary signal to a secondary signal, the strength of which is related to the speed of changes in said primary signal, and second means connected to said first means and controlling the braking force of a fluid-operated brake system so as to momentarily reduce the braking force in response to a sudden change in said secondary signal, corresponding to a sudden reduction in the ground braking moment of the wheel and due to reduced damping of the tire, whereby the locking risk is removed.

4,333,147

MULTIPLEXED INDUCTIVE AUTOMATED GUIDANCE FOR MOVING VEHICLES

William R. Regueiro, Troy; Robert W. Cowan, Sterling Heights, and Richard W. Dick, Redford Township, Wayne County, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 13, 1980, Ser. No. 149,437
Int. Cl.[3] G06F *15/50*; B62D *1/24*
U.S. Cl. 364—436 3 Claims



2. An automated guidance control system comprising:

a plurality of guideway conductors arranged to define an equal number of partially coincident vehicle travel paths;

one or more vehicles associated with each of said guideway conductors;

wayside control means for transmitting uniform duration wayside-to-vehicle communications over each of said guideway conductors in sequence, each communication comprising an identification portion uniquely corresponding to the identity of a selected vehicle, and a control portion containing control information for said selected vehicle;

lateral guidance means aboard each vehicle including first means for developing a lateral error signal in response to the detection of an electromagnetic field surrounding a current carrying guideway conductor in the vicinity of the vehicle and second means for controlling the lateral position of the vehicle in response to a lateral error value applied thereto;

sample-and-hold means for applying a lateral error value to said second means, said sample-and-hold means being effective when enabled to update said applied value in accordance with the instantaneous value of said lateral error signal;

control means aboard each vehicle for receiving and processing wayside-to-vehicle communications from said guideway conductor, said control means including timing means for developing control pulses at predetermined intervals relative to the receipt of a synchronization signal, the duration of said intervals being a function of the number of guideway conductors and the wayside-to-vehicle communication duration, and comparator means for applying a synchronization signal to said timing means when the identification portion of a received wayside-to-vehicle communication matches the identity of the respective vehicle, so that said control pulses coincide with the transmission of subsequent wayside-to-vehicle communications over the same guideway conductor; and

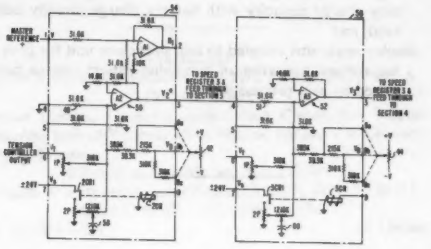
means for momentarily enabling said sample-and-hold means in time with the development of said control pulses whereby each vehicle is controlled to follow the travel path defined by the guideway conductor with which it is associated.

4,333,148

PROCESS LINE PROGRESSIVE DRAW CONTROL SYSTEM

Curtis L. Ivey, Amherst, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 28, 1979, Ser. No. 98,002
Int. Cl.[3] G06G *7/66*; B21B *37/00*
U.S. Cl. 364—469 4 Claims


MASTER REFERENCE
TO SPEED REGULATOR 2 & FEED THROUGH TO SECTION 3
TO SPEED REGULATOR 3 & FEED THROUGH TO SECTION 4
TENSION CONTROLLER OUTPUT

1. A progressive draw controller for a process line having a plurality of stands, said controller comprising:

a first no-draw stand control having a speed regulating means with a master reference voltage V applied thereto,

a second stand control having a second speed regulating means and having means for generating a second stand voltage V_2 derived from a preselected potential value linearly variable between $+V$ and $-V$, said second voltage V_2 being applied to the second stand speed regulation means, and

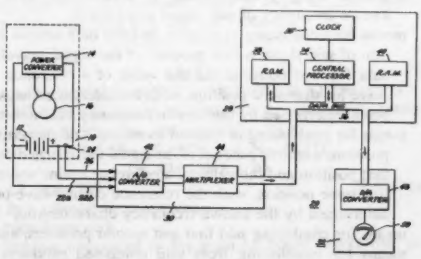
each succeeding stand control having an associated speed regulating means and having means for generating a stand voltage for that stand derived from a potential value linearly variable between $+V$ and $-V$ preselected for that stand and from the stand voltage generated by said voltage generating means associated with the next preceding stand, the stand voltage for each stand being applied to the speed regulating means for that stand.

4,333,149

MICROPROCESSOR-BASED STATE OF CHARGE GAUGE FOR SECONDARY BATTERIES

Dale F. Taylor; John S. Sicko, both of Schenectady, N.Y., and William S. Passman, Salem, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 6, 1980, Ser. No. 109,813
Int. Cl.[3] G01N *27/42*; G06F *15/56*
U.S. Cl. 364—481 11 Claims



1. A state of charge indicator for measuring the state of

charge of secondary batteries and for providing a visual indication of remaining battery charge comprising:

a data circuit adapted to be coupled to a secondary battery under load for providing first and second output signals proportional to the magnitude of battery discharge current and battery terminal voltage, respectively;

processing means coupled to said data circuit for computing battery dynamic resistance in accordance with the magnitude of battery discharge current and the magnitude of battery terminal voltage and for computing total battery charge capacity in accordance with battery dynamic resistance and battery charge already delivered and determining the remaining battery charge by comparing total battery charge capacity with battery charge already delivered; and

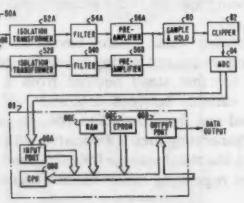
display apparatus coupled to said processor unit for providing a visual indication of remaining battery charge determined by said processor unit.

4,333,150

SIGNAL RECEIVING APPARATUS AND METHOD

Thomas C. Matty, N. Huntingdon, and Aaron C. James, Jefferson Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 28, 1980, Ser. No. 116,119
Int. Cl.³ H04M *1/50*; G01R *23/02*
U.S. Cl. 364—484 **12 Claims**



1. In signal receiving apparatus operative with an input signal to determine the presence of a signal component having a known frequency characteristic, the combination of

means for taking a selected number of data samples of the input signal with said number having an integer relationship with said frequency characteristic,

means for providing a signal waveform by superimposing at least first and second groups of said data samples with said groups being predetermined in accordance with the known frequency of said signal component,

means for establishing in relation to each data sample position of said signal a first product of the signal waveform data for that position and the value of a reference sine wave for that same position, with the reference sine wave being determined by the known frequency characteristic,

means for establishing in relation to each of said data sample positions a second product of the signal waveform data for that position and the value of a reference cosine wave for that same position, with the reference cosine wave being determined by the known frequency characteristic,

means for combining said first and second products, and

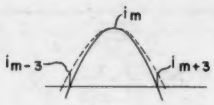
means for establishing from said combined products the presence of the signal component in relation to a desired threshold magnitude for the signal component.

4,333,151

METHOD FOR PROTECTING AN ELECTRIC POWER SYSTEM AND DIGITAL PROTECTIVE SYSTEM

Tetsuo Matsushima, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 21, 1979, Ser. No. 106,365
Claims priority, application Japan, Dec. 28, 1978, 53/161129
Int. Cl.³ H02H *3/42*
U.S. Cl. 364—492 **16 Claims**



1. A machine implemented method for protecting an electric power system comprising the steps of:

sampling, at a predetermined sampling interval, an AC electrical quantity in said electric power system to obtain sampled data, each of which is indicative of an instantaneous value of said electrical quantity at a respective sampling time point,

converting said sampled data into first digital data,

storing said first digital data,

retrieving said first digital data and preparing therefrom a digital data q_m indicative of an instantaneous value at a first time point of an AC electrical quantity relating to said electric power system and digital data q_{m-n} and q_{m-n+1} indicative of instantaneous values of an AC electrical quantity relating to said electric power system, the data q_{m-n} being indicative of an instantaneous value at a time point in advance of said first time point by an angle of $\alpha°$ in the range of from 0° to 180°, and the data q_{m-n+1} being indicative of an instantaneous value at a time point lagging behind said first time point by an angle of $(180-\alpha)°$,

calculating a first value in accordance with the following expression:

$$\frac{1}{2}\{a\times q_{m-n}-(2-a)\times q_{m-n+1}\}$$

where $a=\alpha/90$

and, producing from the data q_m and said calculated first value a signal for use as a condition for tripping a circuit breaker in said electric power system of for operating an alarm device.

4,333,152

TV MOVIES THAT TALK BACK

Robert M. Best, 16016 9th NE., Seattle, Wash. 98155

Continuation-in-part of Ser. No. 136,100, Mar. 31, 1980, which is a continuation of Ser. No. 9,533, Feb. 5, 1979, abandoned. This application Jun. 13, 1980, Ser. No. 159,141
Int. Cl.³ G11B *31/00*; G06F *15/44*; G10L *1/00*
U.S. Cl. 364—521 **10 Claims**

2. In a video system adapted to present a sound movie with which a human viewer interacts, the improvement for simulating a voice conversation between the viewer and the movie, comprising:

video means for generating picture elements of a first animated cartoon picture linked to a plurality of second animated cartoon pictures, the cartoon pictures including a talking face;

means for displaying a plurality of messages, each message corresponding to a second animated cartoon in said plurality thereof;

means for receiving from said viewer a signal corresponding to a selected message in said plurality of messages; and

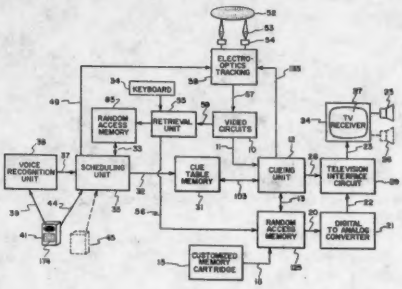
audio means for electronically generating a voice signal including words in said selected message, thereby simulating the viewer's side of a voice conversation,

said video generating means further generating picture elements of a second animated cartoon picture corresponding to said selected message accompanied by a second voice signal responsive to the selected message, thereby simulating a voice conversation between the viewer and the talking face in the animated cartoon movie.

7. A method of controlling a branching movie with words spoken by a human viewer of the movie, comprising the steps of:

presenting to said viewer a first scene in said movie linked to a plurality of second scenes therein;

presenting to said viewer a plurality of commands, each command corresponding to one second scene in said plurality thereof;



presenting to said viewer a plurality of abbreviations corresponding to said plurality of commands to elicit from said viewer a spoken response;

analyzing said spoken response electronically to determine which selected abbreviation in said presented plurality of abbreviations resembles said spoken response, thereby determining which selected command in said plurality of presented commands corresponds to said spoken response; and

presenting to said viewer a second scene in said plurality thereof corresponding to said selected command, thereby executing the selected command.

4,333,153

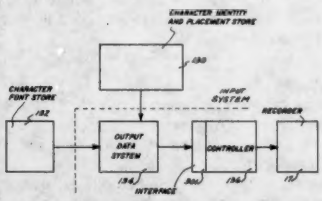
SCANNING AND CONTROL SYSTEM FOR ELECTRO OPTICAL PRINTER

Alfred E. Mletzko, Woodbury, and Andrew P. Gonet, Stamford, both of Conn., assignors to Eltra Corporation, Toledo, Ohio

Filed Nov. 26, 1979, Ser. No. 97,281

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—523 **47 Claims**



1. An electrophotographic typesetting system having a raster scanning means including means for directing a beam of modulated radiation across an imaging surface, means for providing relative motion between said beam and an imaging surface to produce a succession of raster lines, and forming a plurality of characters on said surface,

including means for providing first digital data defining the identity and location of characters, font storage means providing second digital data defining the contour of a plurality of characters with respect to a normalized encoded set of first and second coordinates, data processing means connected to said first and second digital data for producing third digital data defining the character boundaries intersecting a raster line, means for modulating said beam to change the state of the beam from a first state to a second state at a first intersection and to reverse the state of the beam at a successive intersection, forming said characters on said surface, said data processing means including a raster line store for storing said third digital data,

and a controller for controlling at least a part of said system and having means for interogating said raster line store and inhibiting said data processing means from transmitting said third digital data in response to an incompletely filled line store.

4,333,154

DEVICE FOR DETERMINING THE DIRECTION OF A LINE OF SIGHT

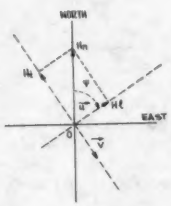
Jacques Devaud, Chabeuil; Jean-Robert Costet, and Michel Moulin, both of Valence, all of France, assignors to Crouzet, Paris, France

Filed Mar. 5, 1980, Ser. No. 127,788

Claims priority, application France, Mar. 9, 1979, 79 06311

Int. Cl.³ G01B *7/00*; G06F *15/20*

U.S. Cl. 364—559 **8 Claims**



1. A device for determining the direction of a line of sight or the orientation of a sighting trihedron associated with said line of sight, defined by a magnetic azimuth angle, an elevation angle and an inclination angle determined in a reference trihedron, said sighting and reference trihedron defining a long axis and a cross axis, said device comprising: a sighting unit defining said sighting trihedron, a gravimetric detector for measuring components of the gravity acceleration vector in the sighting trihedron, computer means connected to said gravimetric detector for computing said elevation and inclination angles in terms of said components of the gravity acceleration vector, a magnetometric detector for measuring components of the earth magnetic field vector in the sighting trihedron, said computer means being connected to said magnetometric detector for computing the components of the earth magnetic field vector along said long axis and said cross axis in terms of said components of the earth magnetic field vector, and for computing said magnetic azimuth angle in terms of said components along said long axis and said cross axis.

4,333,155

CALCULATOR HAVING A MODULAR KEYBOARD

John N. Johnston, North Plainfield, N.J., assignor to Litton Business Systems, Inc., Morris Plains, N.J.

Filed May 18, 1979, Ser. No. 40,131

Int. Cl.³ G06F *1/00*

U.S. Cl. 364—708 **10 Claims**

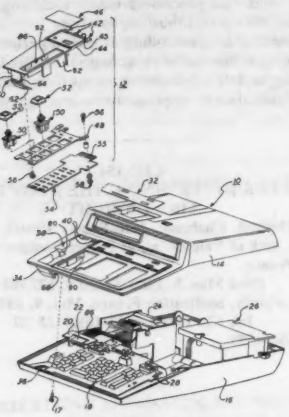
1. In a calculator comprising:

a main keyboard;

a housing connected to the main keyboard and having an opening therein;

a keyboard module for insertion into the opening, the key-

board module having a second keyboard including at least one key switch, electrical circuit means connected to the key switch, first connecting means for electrically connecting the circuit means to the calculator, and a module frame supporting the second keyboard, the electrical circuit means and the connecting means, the improvement comprising:



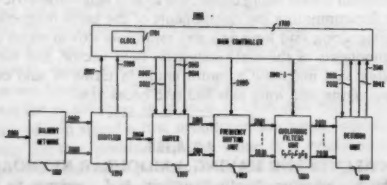
second connecting means disposed in the opening for electrically connecting the first connecting means in the keyboard module to the calculator, the second connecting means being movable at least in the direction of insertion of the module into the opening, whereby keyboard modules of different sizes are insertable into the opening.

4,333,156

BROADBAND CYCLOTOMIC TONE DETECTOR

Robert P. Kurshan, New York, N.Y., and David Malah, Kiryat-Bialik, Israel, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 23, 1980, Ser. No. 162,256
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—724 **31 Claims**



1. Circuitry for detecting the frequency of a discrete-time input signal

CHARACTERIZED BY

control means (1700) for operating on said input signal by sequentially decimating said input signal to provide a decimated signal; and

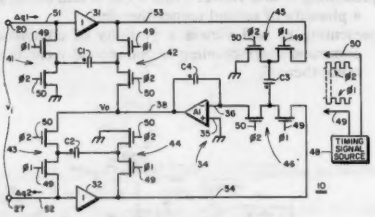
cyclotomic filter means (1500), responsive to said control means, for receiving and processing said decimated signal.

4,333,157

SWITCHED-CAPACITOR FLOATING-INDUCTOR SIMULATION CIRCUIT

Man S. Lee, Belmont, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Jun. 25, 1980, Ser. No. 162,981
Int. Cl.³ G06G *7/62*; H03H *11/00*
U.S. Cl. 364—802 **17 Claims**



1. An integratable switched-capacitor floating-inductor simulation circuit comprising:

first and second nodes adapted for receiving an input voltage;

first and second voltage follower means having input terminals connected to said first and second nodes, respectively, and having output terminals across which the input voltage is established;

first, second and third capacitors having capacitances C1, C2, and C3;

integrator means including a fourth capacitor having a capacitance C4 associated therewith, and having an input and an output terminal; and

switch means associated with said first, second and third capacitors and being periodically operative in first and second switch states; operation of said switch means in the first state electrically connecting said first and second capacitors across said first and second voltage follower means, respectively, for discharging these capacitors, and electrically connecting said third capacitor to the output terminal of at least one of said voltage follower means for charging said third capacitor with the output voltage thereof; operation of said switch means in the second state electrically connecting said third capacitor to said integrator means for causing the latter to integrate the charge on said third capacitor and produce an output voltage that is proportional to the integral of the input voltage that is available on the output terminals of said voltage follower means, and electrically connecting said first and second capacitors to said integrator means for charging these two capacitors to the output voltage, whereby a switched-capacitor floating-inductor is simulated across said first and second nodes.

4,333,158

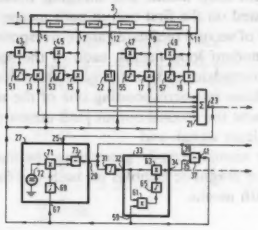
AUTOMATIC GAIN CONTROL CIRCUIT FOR AN ADAPTIVE FILTER

Johannes O. Voorman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1980, Ser. No. 129,050
Claims priority, application Netherlands, Mar. 16, 1979, 7902093
Int. Cl.³ H03H *21/00*; H03G *3/20*
U.S. Cl. 364—825 **3 Claims**

1. An automatic gain control circuit for an adaptive filter, said filter including a delay circuit having a plurality of taps thereto, a plurality of amplitude control circuits coupled respectively to said plurality of taps, correlation circuits for respectively providing control signals for said amplitude control circuits, means for combining the outputs from said amplitude control circuits for forming a corrected output signal of

said filter, and a difference determining circuit having an input coupled to the corrected signal output of the filter and an output for providing an error signal which, in turn, is applied to said correlation circuits, characterized in that said automatic gain control circuit is coupled to another input of said difference determining circuit and to the corrected signal output of the filter for deriving a reference signal from the corrected output signal of the filter, said reference signal having a waveform which substantially corresponds to the desired waveform



of the corrected output signal, said automatic gain control circuit comprising a further control circuit having a first input and an output coupled respectively to the input and the output of the automatic gain control circuit, an integrator coupled to a second input of said further control circuit for providing a control signal therefor, and a multiplying circuit having inputs coupled respectively to the input of said automatic gain control circuit and the output of said difference determining circuit and an output coupled to said integrator.

4,333,159

COMBINATION SHIFT REGISTER, COUNTER AND MEMORY DEVICE

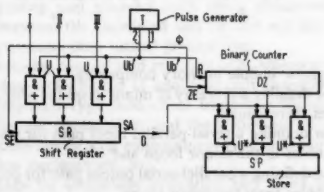
Klaus D. Bigall, Vaterstetten, and Helmut Roesler, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 90,998

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850652

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—900 **2 Claims**



1. A digital semiconductor circuit which receives input signals (I, II, III . . .) for charging a respective memory cell of a clock-controlled shift register (SR) operating in parallel to serial operation, comprising a clock generator (T) producing first and second clock output signals (1, 2), a shift register (SR), a binary digital counter (DZ), said shift register (SR) and said binary counter (DZ) receiving said first clock output signal (1), a plurality of AND gates (U*) receiving the outputs of respective counting stages of said digital counter (DZ), the serial output of said shift register (SR) connected to inputs of all of said AND gates (U*), an address memory (SP) receiving the outputs of said plurality of AND gates (U*) which are connected to the respective memory cell of said address memory (SP) which is designed as a shift register, a second plurality of AND gates (U) receiving a second output of said clock generator (T) as well as said input signals (I, II, III . . .) and the output of said second plurality of AND gates connected to said shift register and said second output (2) connected as the reset pulse of said binary digital counter (DZ) and said first and second outputs (1, 2) of said clock generator (T) synchronized such that reset of said binary counter occurs only after the complete emptying of said shift register (SR).

4,333,160

MEMORY CONTROL SYSTEM

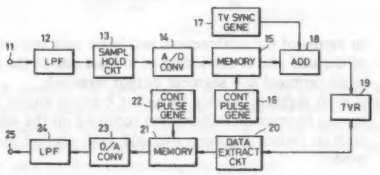
Harukuni Kobari, Yokohama; Yasuhiro Yamada, Fujisawa; Susumu Suzuki, and Chitoshi Hibino, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 19, 1979, Ser. No. 95,553

Claims priority, application Japan, Nov. 20, 1978, 53-143180; Nov. 20, 1978, 53-143181

Int. Cl.³ H04N *5/76*; G06F *13/00*

U.S. Cl. 364—900 **15 Claims**



1. A memory control system comprising a memory supplied with an digital signal comprising a series of data; and a control circuit for producing a control signal to control said memory in such a manner that the total memory capacity of said memory is partitioned into a plurality (k) of memory capacity segments having given capacity values (lengths) which are different from each other, and said digital signal is written in datum by datum with an order and further the written-in digital signal is read out datum by datum with an order rearranged from the order with which the digital signal is written in, by means of circulating addresses through the plurality of divided memory capacity segments while maintaining the relationship in terms of capacity values (lengths) between the plurality of divided memory capacity segments to be constant.

4,333,161

DATA PROCESSING APPARATUS OPERATIVE ON DATA PASSING ALONG A SERIAL, SEGMENTED STORE

Ivor Catt, "Hartspring", 17 King Harry Lane, St. Albans, Hertfordshire, England

Continuation-in-part of Ser. No. 974,482, Dec. 29, 1978, abandoned, which is a continuation of Ser. No. 785,177, Apr. 6, 1977, abandoned. This application Jan. 30, 1980, Ser. No. 116,848

Int. Cl.³ G06F *13/00, 3/00*; G11C *21/00, 19/00*

U.S. Cl. 364—900 **3 Claims**

1. A data processing apparatus comprising

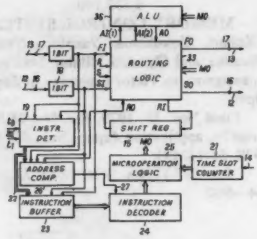
a central unit;

a serial store formed of a plurality of segments each with input and output terminals connected in a chain to form a serial path for data and instructions from the central unit, via successive segments and back to the central unit;

timing means to effect passage of data and instructions along the said path;

each segment including a shift register, an arithmetic and logic unit, and switching means operable in a first mode to set up a serial configuration in which the segment input terminal is connected to the input terminal of the shift register and the output terminal of the shift register is connected to the segment output terminal, operable in a second mode to set up a recirculating configuration in

which the segment input terminal is connected to the segment output terminal by a bypass line and the register output terminal is connected to the register input terminal by a feedback connection, and operable in a third mode to set up a processing configuration in which the segment input terminal and register output terminal are connected



to inputs of the arithmetical and logic unit and an output of the said unit is connected to at least one of the register input terminal and segment output terminal;

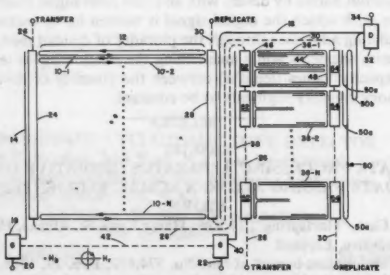
and each segment further including control means responsive to instruction information received on the said serial path to switch between the said first, second and third modes.

4,333,162

BUBBLE MEMORY WITH CONDUCTOR PROGRAMMABLE TRANSPARENT ERROR MAP

George F. Reyling, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 4, 1980, Ser. No. 174,939
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—15 10 Claims



1. A magnetic bubble memory comprising:

a plurality of data loop means, some of which may be defective, for storing magnetic bubbles representative of information therein;

first input path means for propagating bubbles to the data loop means;

a plurality of first transfer gates each normally capable of transferring a bubble from the first input path means to a corresponding one of the data loop means upon receiving a transfer-in signal and adapted to be selectively disabled to prevent transferring a bubble into a defective data loop means upon receiving the transfer-in signal;

first output path means for propagating bubbles from the data loop means;

a plurality of first replicate gates each for replicating a bubble onto the output path means from a corresponding one of the data loop means upon receiving a replicate signal;

a plurality of redundant loop means for storing magnetic bubble representative of information therein;

second input path means for propagating magnetic bubbles to the redundant loop means;

a plurality of second transfer gates corresponding to each of the redundant loop means, each of the second transfer gates adapted to be selectively enabled to transfer a bubble from the second input path means to its corresponding one of the redundant loop means upon receiving the transfer-in signal;

second output path means for propagating bubbles from the redundant loop means and merging them with bubbles propagated on the first output path means;

a plurality of second replicate gates corresponding to each of the redundant loop means, each of the second replicate gates adapted to be selectively enabled for replicating a bubble from its corresponding one of the redundant loop means onto the second output path means upon receiving the replicate signal; and

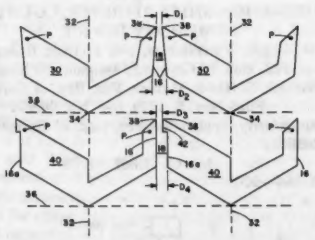
means for simultaneously generating the same input data stream of magnetic bubbles on both the first and second input path means.

4,333,163

BUBBLE MEMORY WITH INCREASED GAP TOLERANCE BETWEEN PROPAGATION ELEMENTS

Peter K. George, Morgan Hill, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 25, 1980, Ser. No. 143,593
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—43 9 Claims



1. A magnetic bubble memory comprising:

means for defining a plurality of minor loops for propagating bubbles therearound;

means for defining a serial-parallel input path for propagating bubbles to the minor loops and

means for defining a parallel-serial output path for propagating bubbles from the minor loops;

the minor loops each including first and second legs made of a plurality of asymmetric chevron propagation elements arranged in side by side consecutive fashion,

each chevron propagation element having a peak and a pair of poles,

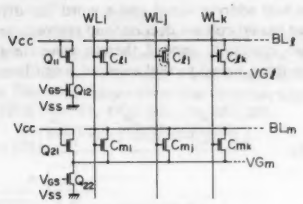
adjacent chevron propagation elements in a leg having opposing side edges normally defining a gap therebetween extending in the plane of the elements and increasing in width at a predetermined rate moving in a direction away from the poles toward a line intersecting the peaks of the adjacent elements, and

the predetermined rate of gap width increase being sufficient so that the majority of shorts which occur between adjacent ones of the chevron propagation elements due to fabrication inaccuracies will not create barriers to bubble propagation.

4,333,164
READ ONLY MEMORY

Yasuo Orikabe, Kawasaki, and Masakazu Matsuda, Ishikawa, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 25, 1980, Ser. No. 124,466
Claims priority, application Japan, Feb. 28, 1979, 54-23084
Int. Cl.³ G11C *17/00*
U.S. Cl. 365—104 19 Claims



1. A read only memory comprising:

a plurality of word lines,

a plurality of bit lines disposed relatively to said plurality of word lines to define a plurality of intersections therebetween,

a plurality of virtual ground lines respectively corresponding to said plurality of bit lines, and

a plurality of memory cells comprising field effect transistors, each located at a corresponding intersection of a respectively associated word line and a respectively associated bit line,

each of said transistors having a first electrode connected to said respectively associated word line, a second electrode connected to said respectively associated bit line, and a third electrode connected to said virtual ground line respectively corresponding to said respectively associated bit line,

each of said bit lines having plural said memory cells associated therewith, the plural said field effect transistors comprising said memory cells being connected in parallel between the associated said bit line and the respectively corresponding virtual ground line,

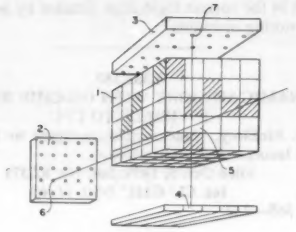
particular ones of said memory cells, selected according to data to be stored in said read only memory, comprising depletion-type field effect transistors formed selectively by ion implantation and the remainder of said memory cells comprising enhancement-type cells not subjected to ion implantation, and

means for selectively activating said word lines and said virtual ground lines to establish a first potential difference between a selected word line and the virtual ground line corresponding to a selected bit line which, as applied to the correspoding memory cell at the intersection of the selected word and bit lines, is sufficient to turn on said corresponding memory cell when comprising a depletion-type transistor but is insufficient to turn on said corresponding memory cell when comprising an enhancement-type transistor, and to establish a second potential difference between each non-selected word line and the virtual ground line corresponding to the said selected bit line which, as applied to the corresponding memory cells at the intersections of said non-selected word lines and said selected bit line, is insufficient to turn on said corresponding memory cells when comprising either a depletion-type transistor or an enhancement-type transistor.

4,333,165
THREE-DIMENSIONAL PATTERN MAKING METHODS

Wyn K. Swainson, Berkeley, and Stephen D. Kramer, Oakland, both of Calif., assignors to Formigraphic Engine Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 544,480, Jan. 27, 1975, Pat. No. 4,078,229. This application Dec. 1, 1977, Ser. No. 856,434
Int. Cl.³ G11C *11/42, 13/04*
U.S. Cl. 365—120 27 Claims



1. A method for generating a substantially persistent three-dimensional inhomogeneity pattern in active media dispersed in a volume of sustaining fluid medium, in response to energy level changes stimulated by directed electromagnetic energy input, said method comprising the steps of:

generating control signals specifying fixed relative coordinate positions within said volume;

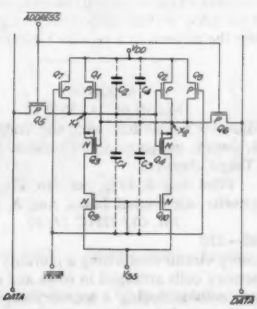
directing electromagnetic energy into said volume to cause energy level changes within molecules of said active media at said coordinate positions corresponding to said three-dimensional pattern, said molecules being an agent capable of receiving energy from a source external to said volume and transferring energy so as to create change in the physio-chemical behavior state of said active media; and

stimulating said molecule to effect an intramolecular radiationless transition not depending on 1/rq to produce a reaction generating said three-dimensional pattern.

4,333,166
SEMICONDUCTOR MEMORY CIRCUITS

Colin W. Edwards, Lightwater, England, assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 10, 1979, Ser. No. 101,968
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—182 17 Claims



1. A non-volatile bistable semiconductor latch having a pair of cross-coupled branches connectable across a common supply voltage, each branch including a complementary driver or load and a driver connected in series at a respective node, at

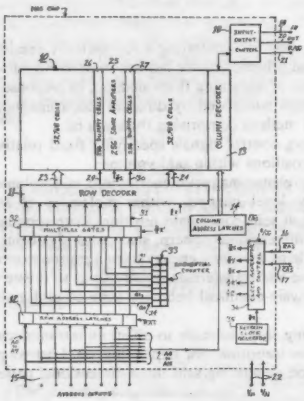
least one of said complementary drivers or loads, or drivers, including an insulated gate field effect transistor (IGFET) having a threshold voltage which may be varied by raising its gate potential above a predetermined level relative to the potential on one of its other electrodes, whereby volatile information stored in said latch is rendered non-volatile by increasing said gate potential above said predetermined level, and means for precharging both said nodes to an identical logic state such that, when the precharge signal is removed, at least one variable threshold IGFET switches in a direction to place the latch in the correct logic state dictated by an earlier non-volatile storing operation.

4,333,167

DYNAMIC MEMORY WITH ON-CHIP REFRESH INVISIBLE TO CPU

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 5, 1979, Ser. No. 82,371
Int. Cl.³ G11C *7/00, 11/40*
U.S. Cl. 365—222 **14 Claims**



10. A semiconductor memory device comprising an array of memory cells in a single integrated circuit formed in a semiconductor body, the memory device having refresh address generator means included within said body along with means for changing the address produced by the generator means, addressing means included within the body for alternatively receiving an address from inputs to the device or from the generator means and for accessing the array using said address, and means included within the body for activating the means for changing the address in a regular timing sequence.

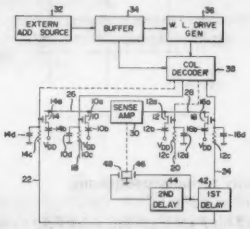
4,333,168

MEMORY CIRCUIT

Koichiro Mashiko; Toshio Ichiyama, and Makoto Taniguchi, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1980, Ser. No. 176,638
Claims priority, application Japan, Aug. 8, 1979, 54-101980
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—210 **2 Claims**

1. A memory circuit comprising a plurality of single transistor type memory cells arranged in rows and columns, each of said memory cells including a memory capacitor having an electric charge stored thereon; a pair of dummy memory cells identical in construction to said memory cells for each row; a sense amplifier for each row; a pair of true and complementary bit lines connected to said sense amplifier for each row; the memory cells arranged in each row being connected to said sense amplifier through said pair of true and complementary bit lines to be located on both sides of said sense amplifier; said pair of dummy memory cells for each row being connected to said sense amplifier through said pair of true and complementary bit lines to be located on both sides of said sense amplifier respectively; address means including a plurality of word lines each connected to the memory cells arranged in each column, a pair of dummy word lines connected to said dummy memory cells respectively for each row, a column decoder connected to all said word lines and dummy word lines and responsive to an address signal externally applied thereto to select both one of said word lines and one of said dummy word lines as determined by said address signal, and a word line-drive generator connected to said column decoder and response to said address signal also externally applied thereto generate and supply a word line-drive signal to said selected word line and dumiy



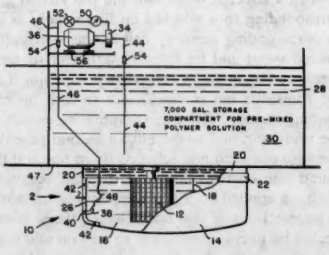
word line through said column decoder to develop potentials thereon to effect the turn-on of the memory cell and the dummy memory cell connected to said selected word line and dummy word line respectively thereby to cause said electric charges on said memory capacitor in said turned-on memory cell and dummy memory cell to be read out on an associated pair of said true and complementary bit lines respectively; and activation means for each row connected to said pair of dummy word lines for said row and also to said sense amplifier for said row to generate and supply an activating signal to said sense amplifier to activate the latter when said electric charges on said memory capacitor are properly read out on the last-mentioned pair of said true and complementary bit lines; said sense amplifier, as activated, amplifying a potential difference between potentials developed on said pair of true and complementary bit lines due to the reading of said electric charges.

4,333,169

FLOW NOISE SUPPRESSION SYSTEM FOR A SONAR DOME

Jack W. Hoyt, Pasadena, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1966, Ser. No. 585,218
Int. Cl.³ H04K *3/00;* **H04R** *1/44*
U.S. Cl. 367—1 **5 Claims**



1. In a sonar transducer unit adapted to be carried by a

moving water vehicle external to the hull thereof and submerged in the ambient stream, the combination comprising;

(a) an acoustically transparent shell forming a substantially closed container about the transducer unit, and

(b) means for injecting a dilute aqueous solution of a water soluble polymer material of a first predetermined concentration into the layer of ambient water flow adjoining the exterior of the surface of the shell in such a manner that substantially the entire exterior surface of the shell is bathed in the sheath of dispersed solution.

4,333,170

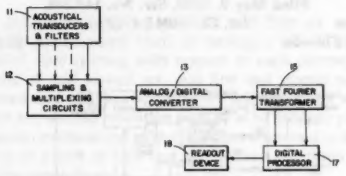
ACOUSTICAL DETECTION AND TRACKING SYSTEM

Lemuel P. Mathews, Rancho Palos Verdes; Charles A. Lohman, Fullerton, and Paul R. Armstrong, Yorba Linda, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Nov. 21, 1977, Ser. No. 853,207

Int. Cl.³ G01S *3/80*

U.S. Cl. 367—125 **13 Claims**



1. An acoustical detection system for detecting targets which generate acoustical signals comprising:

at least one pair of acoustical transducer means for receiving acoustical signals from said targets and transducing said acoustical signals to electrical signals having a plurality of frequency bins, said transducer means being spaced from each other,

means for converting said electrical signals from analog signals to digital signals,

means for processing said digital signals to generate phase difference signals in accordance with the phase differences between each of the frequency bins of the signals received by said pair of transducer means,

means for dividing each of said phase difference signals by a signal in accordance with the frequency of the frequency bin associated therewith to generate phase difference slope signals for each of said frequency bins,

means for grouping together signals representing common phase difference slopes, the signals in each such grouping representing signals emanating from a common target, and

means for processing each of the groupings of signals to determine the direction and identity of each of the targets.

4,333,171

ELECTRONIC TIMEPIECE WITH DIFFUSION RESISTOR FOR COMPENSATING THRESHOLD VARIATIONS

Yasuhiko Nishikubo, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,764

Claims priority, application Japan, Sep. 4, 1979, 54-113166; Sep. 4, 1979, 54-113167

Int. Cl.³ G04C *3/00, 5/00*

U.S. Cl. 368—87 **3 Claims**

1. An electronic timepiece comprising:

an electronic circuit unit including,

an oscillator for producing a time standard signal,

a frequency divider for dividing the output signal of said oscillator, and

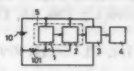
a display driver,

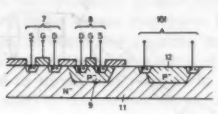
said electronic circuit unit being composed of a CMOS integrated circuit;

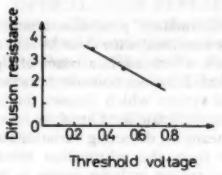
a display device connected to said electronic circuit unit,

a voltage supply connected to said electronic circuit unit;

a resistor formed in the N-type substrate of a CMOS transistor within said CMOS integrated circuit at the same time







with the diffusion of the P-well for the N-channel MOS transistor of said CMOS transistor, and

a voltage supply circuit including said resistor and connecting the voltage supply to said electronic circuit unit for supplying the supply voltage from said voltage supply to a part of said CMOS integrated circuit via said resistor.

4,333,172

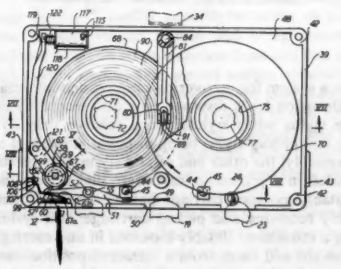
METRONOME CARTRIDGE

Shin H. Chen, Apartment B, 6333 N. Lakewood, Chicago, Ill. 60660

Filed Jul. 12, 1979, Ser. No. 56,983

Int. Cl.³ G04F *5/02*

U.S. Cl. 369—2 **30 Claims**



1. In combination with a cassette player having driving means:

a metronome cartridge having a body adapted to be removably received in operative relation to the player interchangeably with tape cassettes;

and tape-free mechanical means carried by said cartridge body and adapted to be driven by said driving means for generating metronomic time signals in the operation of said player.

4,333,173
OPTICAL INFORMATION PROCESSOR WITH PRISMATIC CORRECTION OF LASER BEAM SHAPE

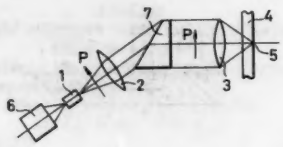
Seiji Yonezawa, Hachiouji; Toshio Sugiyama, Toyokawa, and Masahiro Ojima, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1980, Ser. No. 152,297

Claims priority, application Japan, Jun. 15, 1979, 54-74664; Oct. 29, 1979, 54-148846[U]; Feb. 18, 1980, 55-17813; Apr. 10, 1980, 55-48436[U]

Int. Cl.³ G11B 7/12

U.S. Cl. 369—45 29 Claims



1. An optical information processor comprising a light source formed by a semiconductor laser having a rectangular light emitting region which emits a beam of light having a substantially-elliptical cross section, an information storage medium, an optical system which focuses the beam of light emitted by the semiconductor laser onto the information storage medium, and means for detecting variations in the amount of light emergent from the information storage medium; wherein said optical system includes means in the form of at least one prism for converting the elliptical light beam emitted by said semiconductor laser device into a beam of circular cross section.

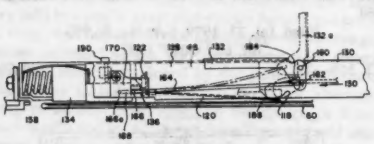
4,333,174
TRANSDUCER DISPLACEMENT APPARATUS FOR VIDEO DISC PLAYER

Myron C. Stewart, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,340

Int. Cl.³ G11B 3/02

U.S. Cl. 369—256 3 Claims



1. In a system for recovering prerecorded information from an information track disposed on a disc record by means of a pickup stylus when stylus/record relative velocity is established; said pickup stylus being disposed at one end of a stylus arm assembly; the other end of said stylus arm assembly being suspended in a protective cartridge; said system including a translatably-mounted carriage having a compartment for removably receiving said pickup cartridge; said system further having a transducer slidably-mounted in said carriage for motion toward and away from a retracted position thereof; said transducer having a support element subject to coupling with the other end of said stylus assembly; said cartridge compartment having a movably-mounted cover; apparatus comprising:

(A) means for generating a force for biasing said transducer away from said retracted position thereof; and

(B) a transducer retraction means including an actuated member; said actuated member engaging said transducer in response to the opening of said cartridge cover for retracting said transducer against the force of said biasing means to provide room for receiving said cartridge in said compartment; said actuated member being responsive to the travel of said cartridge cover in the closing direction for effecting displacement of said transducer away from said retracted position under the influence of said biasing means until said transducer engages said cartridge disposed in said compartment to effect said coupling between said transducer support element and said other end of said stylus assembly; further closing of said cartridge cover causing additional displacement of said actuated member to a location where said actuated member is out of engagement with said transducer so that said biasing means controls said transducer/cartridge coupling independent of said retraction means.

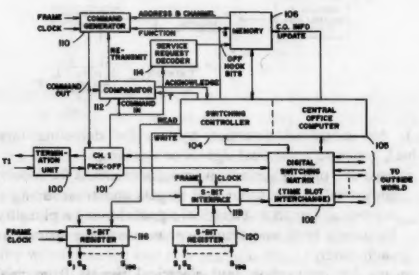
4,333,175
TELEPHONE SYSTEM USING PULSE CODE MODULATED SUBSCRIBER LINES

R. Gordon Cook, Canandaigua, N.Y., and Todd V. Townsend, Reno, Nev., assignors to Lynch Communication Systems, Inc., Reno, Nev.

Filed May 9, 1980, Ser. No. 148,248

Int. Cl.³ H04J 3/08

U.S. Cl. 370—56 20 Claims



1. A telephone system for conveying digital signals between a central office and a plurality of subscriber locations, comprising;

(a) at least one distribution location remote from said central office; each said distribution location being connected to at least one of said subscriber locations by two wire line means;

(b) time-division pulse-code multiplexed digital signal carrier means serially connecting said central office and said distribution locations and being looped back to said central office, said carrier means having a plurality of signal channels transmitted sequentially, said channels occupying equal time intervals in said time division;

(c) switching means at said central office for selectively connecting said channels of said carrier means at said central office to the outside world or to each other;

(d) subscriber-connecting means at said distribution locations for selectively connecting individual ones of said subscriber locations to individual channels of said carrier means under the control of said switching means.

4,333,176
DATA EXTRACTION MEANS FOR USE IN A DATA TRANSMISSION SYSTEM

Floyd W. Looschen, Laguna Beach, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 883,302, Mar. 3, 1978, Pat. No. 4,225,752. This application Jan. 21, 1980, Ser. No. 113,905

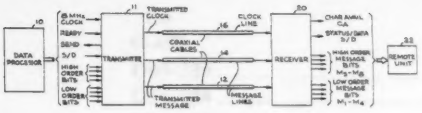
Int. Cl.³ H04J 3/06

U.S. Cl. 370—84 6 Claims

1. Means for extracting different data items from a plurality

of applied digital signals, wherein a first applied digital signal comprises first and second data items occurring during respective first and second time periods, and wherein a second applied digital signal comprises a clock having a first repetition rate during time periods corresponding to said first time periods and having a second repetition rate during time periods corresponding to said second time periods, said means comprising:

strobe generating means responsive to said first applied signal for generating at least three sets of periodically occurring strobe pulses, each set having a repetition rate determined by said clock, each strobe pulse of said second set having a first predetermined time spacing with respect



to each corresponding pulse of said first set, and each strobe pulse of said third set having a second predetermined time spacing with respect to each corresponding pulse of said second set, said first and second predetermined time spacings being chosen in conjunction with said first and second repetition rates so as to produce predetermined combinations of strobe pulses from said sets indicative of which of said first and second repetition rates is being applied; and

data extracting means responsive to said second applied signal and to said strobe pulses and also to said predetermined combinations of strobe pulses for individually extracting said first and second data items from said first applied signal.

4,333,177

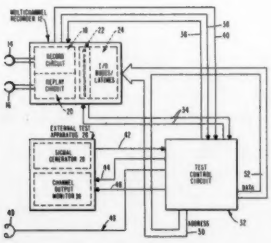
TEST CONTROL CIRCUIT FOR MULTICHANNEL APPARATUS SUCH AS TAPE RECORDERS AND THE LIKE

Philip H. Sutterlin, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Oct. 31, 1979, Ser. No. 90,050

Int. Cl.³ G01R *31/28;* **G06F** *11/00*

U.S. Cl. 371—15 **14 Claims**



1. A test control circuit for selectively coupling the input and output of one or more channels of a multichannel apparatus to selected test signals of external test/monitor means in response to an operator-generated select command and an acknowledgement signal by an associated microprocessor control system, wherein the multichannel apparatus includes input/output buses and respective latches integral with each channel of the multichannel apparatus, comprising the combination of;

channel selector means remote from the multichannel apparatus for supplying digital channel select control signals to the latter for selectively enabling respective latches of the input and output buses of at least one selected channel in the multichannel apparatus, while disabling latches in unselected channels, in response to the operator-generated select command and the acknowledgement signal from the associated microprocessor control system; and

input/output bus buffer means responsive to the channel selector means for selectively coupling the external test-/monitor means to the selected channels of the multichannel apparatus to supply and receive the test signals as remotely directed by the channel selector means.

4,333,178

OPTICAL FIBER REPEATER

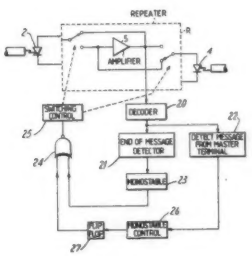
Jeffrey G. Farrington, Bishop's Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 2, 1980, Ser. No. 212,190

Claims priority, application United Kingdom, Dec. 4, 1979, 7941729

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—601 **7 Claims**



1. A data transmission system of the closed-loop type having a plurality of stations coupled to a closed-loop comprising:

a first station of said plurality of stations transmitting a message to a second station of said plurality of stations, said message having a header portion including at least an address of said second station and being transmitted around said loop in a given direction from said first station to said second station, said second station responding to said address and accepting said message after which said second station transmits a reply message to said first station in direction around said loop opposite said given direction, said transmission direction being returned to said given direction after reception of said reply message at said first station; and

a reversible repeater included in each of said plurality of stations coupled to said loop to convey said message and said reply message around said loop, all of said repeaters being reversed when said direction of transmission around said loop is reversed.

DESIGN PATENTS

GRANTED JUN. 1, 1982

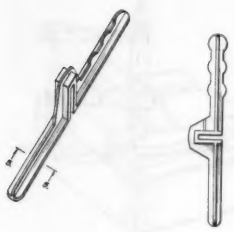
ERRATA

For CLASS	See PATENT NO.
D09–339	264,681
D34–024	264,696
D34–035	264,697

DESIGNS

JUNE 1, 1982

264,640
HANDLE STICK FOR A CONFECTIONERY PRODUCT
Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to RB Toy Development Co., Skokie, Ill.
Filed May 22, 1978, Ser. No. 908,102
Term of patent 14 years
Int. Cl. D01—*99*
U.S. Cl. D1—99

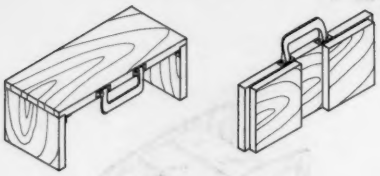


264,641
AIR CARGO CONTAINER
Robert P. Evans, Walnut Creek, and Dale F. Weiss, Hermosa Beach, both of Calif., assignors to Transequip, Inc., Compton, Calif.
Filed Mar. 28, 1980, Ser. No. 135,213
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—30.1

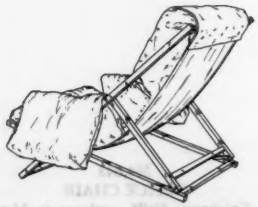
264,642
INVERTIBLE TABLE AND ROCKER COMBINATION
Harry D. Greenman, London, England, assignor to Multi-Commerce U.S.A. Ltd., New York, N.Y.
Filed Nov. 28, 1979, Ser. No. 98,370
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—3

264,643
OFFICE CHAIR
Chuck Pelly, Calabasas, Calif., assignor to Messrs. Willibald Grammer, Amberg, Fed. Rep. of Germany
Filed Sep. 28, 1979, Ser. No. 80,165
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, MRII/303
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

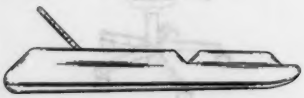
264,644
PORTABLE ORTHOPEDIC FOOTSTOOL
Robert Baker, 8401 Bridgeport Dr., Huntington Beach, Calif. 96246
Filed Oct. 3, 1979, Ser. No. 81,523
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—32



264,645
LOUNGE CHAIR
Richard H. Arnesen, Chicago, Ill., assignor to Gold Medal, Inc., Racine, Wis.
Filed Oct. 9, 1979, Ser. No. 82,596
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



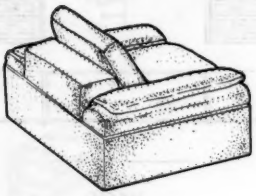
264,646
FLOATABLE LOUNGE CHAIR
Daniel D. Shauan, Griffin Park, 118 Olive St., New Port Richey, Fla. 33553
Filed Nov. 15, 1979, Ser. No. 94,688
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



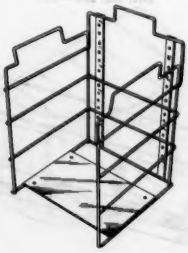
264,647
ROCKING CHAIR
Lynn Turner, 1048 W. Decatur St., Decatur, Ill. 62522
Filed Oct. 9, 1979, Ser. No. 82,619
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49

264,648
SEAT
Rodrigo Rodriquez, Carimate, Italy, assignor to Cassina S.p.A., Milan, Italy
Filed Mar. 18, 1980, Ser. No. 131,544
Claims priority, application Italy, Sep. 19, 1979, 22577 B/79[U]
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67

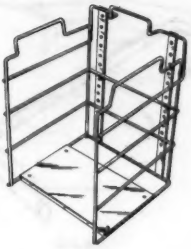
264,649
ARMCHAIR
Giorgio Saporiti, Besnate, Varese, Italy
Filed Apr. 30, 1979, Ser. No. 34,486
Claims priority, application Italy, Dec. 28, 1979, 60906-B/79[U]
The portion of the term of this patent subsequent to Apr. 6, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



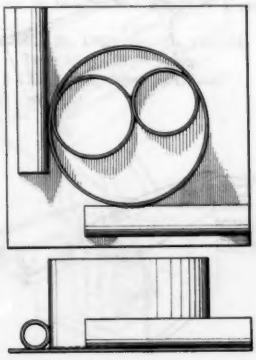
264,650
PLASTIC BAG HOLDING RACK
Gerhard Adamson, West Milford, N.J., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Apr. 22, 1980, Ser. No. 142,728
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



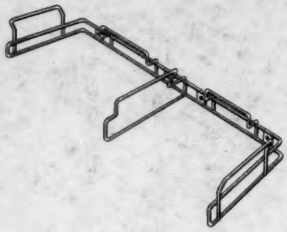
264,651
PLASTIC BAG HOLDING RACK
Gerhard Adamson, West Milford, N.J., assignor to Union Carbide Corp., Danbury, Conn.
Filed Apr. 22, 1980, Ser. No. 142,729
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



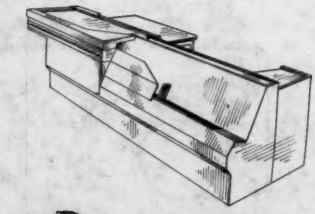
264,652
TREE HOLDER
Sam F. Sovey, 5042 Anthony, Corpus Christi, Tex. 78415
Filed Apr. 2, 1980, Ser. No. 136,714
Term of patent 14 years
Int. Cl. D6—*99*; D11—*02*
U.S. Cl. D6—105

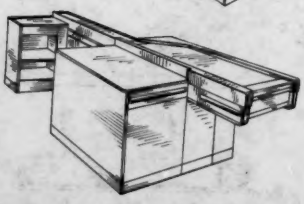


264,653
PLASTIC BAG HOLDING RACK
Gerhard Adamson, West Milford, N.J., assignor to Union Carbide Corp., Danbury, Conn.
Filed Apr. 22, 1980, Ser. No. 142,727
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114

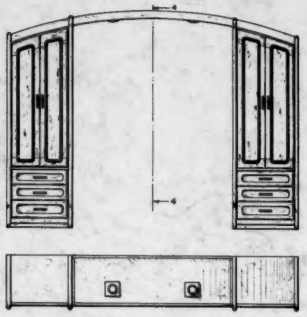


264,654
CHECKOUT COUNTER
Marinus J. M. Langen, Rexdale, and Edgars H. Strauss, Toronto, both of Canada, assignors to H. J. Langen & Sons Limited, Rexdale, Canada
Filed Apr. 9, 1979, Ser. No. 28,519
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—143

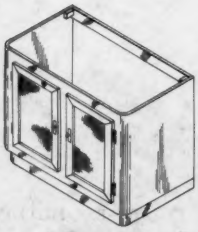




264,655
COMBINED DUAL ARMOIRE AND LIGHT BRIDGE UNIT
Huey T. Keller, 332½ S. Wrenn St., High Point, N.C. 27260
Filed Feb. 21, 1980, Ser. No. 123,284
Term of patent 14 years
Int. Cl. D06—*04, 05*
U.S. Cl. D6—164

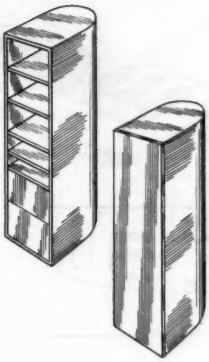


264,656
CABINET
Carl H. Oscarson, Riverwoods, Ill., assignor to Pace Industries Inc., Chicago, Ill.
Filed Jan. 7, 1980, Ser. No. 110,336
Term of patent 3½ years
Int. Cl. D06—*04*
U.S. Cl. D6—168

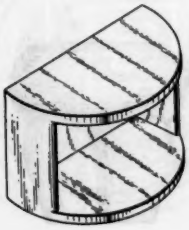


264,657
COFFEE TABLE
Rosemary T. Pettiner, 3684 Walden Pl., Carmel, Ind. 46032
Filed Oct. 9, 1979, Ser. No. 82,786
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—177

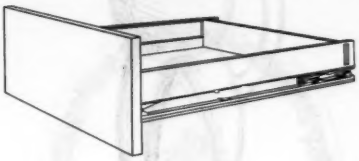
264,658
SHELF UNIT OR SIMILAR ARTICLE
Lydia de Polo, and Jack G. Dunbar, both of New York, N.Y., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Jun. 4, 1979, Ser. No. 45,154
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



264,659
SHELVING UNIT
Frederick E. Markus, 20 Park Ave., Belmont, Mass. 02178
Filed Sep. 20, 1979, Ser. No. 77,295
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

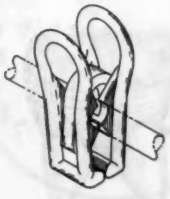


264,660
DRAWER
Erich Röck, and Josef Brunner, both of Höchst, Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Jun. 6, 1980, Ser. No. 157,110
Claims priority, application United Kingdom, Dec. 12, 1979, 992 705
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



264,661
FURNITURE PANEL
Walter K. Otto, High Point, N.C., assignor to Vaughan-Bassett Furniture Company, Inc., Galax, Va.
Filed Oct. 31, 1979, Ser. No. 89,976
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—193

264,662
SPRING CLIP
Leonard Bisk, Elkins Park, and Gunther Rogahn, Lansdale, both of Pa., assignors to Independent Products Company, Inc., Lansdale, Pa.
Filed Mar. 20, 1980, Ser. No. 132,241
Term of patent 14 years
Int. Cl. D6—*08;* D8—*08;* D7—*05*
U.S. Cl. D6—257

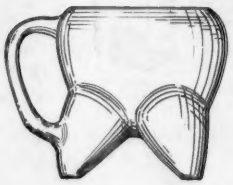


264,663
BEVERAGE MUG
Richard Ochwat, 385 Schmale Rd., Carol Stream, Ill. 60187
Filed Aug. 14, 1980, Ser. No. 177,867
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5

264,664
BEVERAGE MUG
Richard Ochwat, 385 Schmale Rd., Carol Stream, Ill. 60187
Filed Aug. 14, 1980, Ser. No. 177,868
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—5

264,665
BEVERAGE MUG
Richard Ochwat, 385 Schmale Rd., Carol Stream, Ill. 60187
Filed Aug. 14, 1980, Ser. No. 177,869
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—5

264,666
BEVERAGE MUG
Richard Ochwat, 385 Schmale Rd., Carol Stream, Ill. 60187
Filed Aug. 14, 1980, Ser. No. 177,870
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—5



264,667
BEVERAGE MUG
Richard Ochwat, 385 Schmale Rd., Carol Stream, Ill. 60187
Filed Aug. 14, 1980, Ser. No. 177,871
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—5

264,668

TACO SERVER

Janet L. Golubski, and Ralph E. Golubski, both of 5349 Webster Ave., Kansas City, Kans. 66104

Filed Jul. 14, 1980, Ser. No. 167,737
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—21

264,669

DINNER PLATE OR SIMILAR ARTICLE

Frank A. Warren, Denville, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.

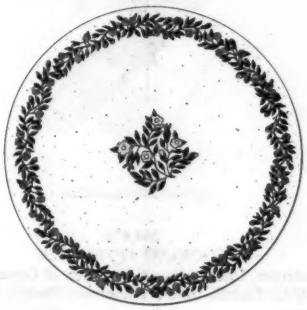
Filed Jul. 14, 1980, Ser. No. 168,691
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—35

264,670

DINNER PLATE OR SIMILAR ARTICLE

Alan H. Friedman, Millburn, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.

Filed Aug. 7, 1980, Ser. No. 176,107
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—35



264,671

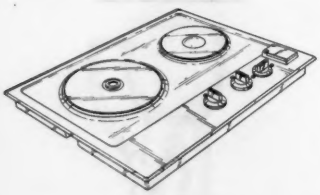
DINNER PLATE OR SIMILAR ARTICLE

Alan H. Friedman, Millburn, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.

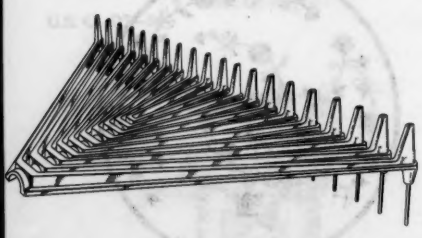
Filed Aug. 7, 1980, Ser. No. 176,108
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—35

264,672
COMBINATION HOLDER AND SET OF SKEWERS OR THE LIKE
Leon L. Griffin, Rte. 2, Knightdale, N.C. 27545
Filed Dec. 14, 1979, Ser. No. 103,484
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—73

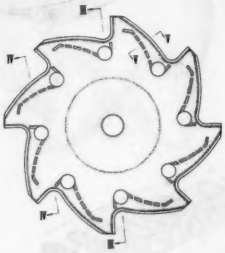
264,673
COOKING APPLIANCE
Felix Schreder, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Gerate Blanc und Fischer, Fed. Rep. of Germany
Filed Jun. 4, 1979, Ser. No. 45,541
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 10 AR 133/78
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—124



264,674
RAKE HEAD
John S. F. Grindlay, Coventry, England, assignor to Coventry Motor & Sundries Limited, Coventry, England
Filed Jun. 12, 1979, Ser. No. 47,797
Term of patent 7 years
Int. Cl. D8—*05*
U.S. Cl. D8—13



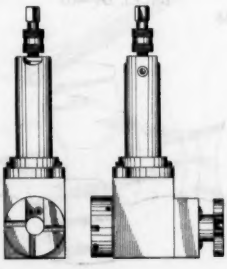
264,675
BLADE FOR POWER SCYTHE
Hisashi Inaga, Tokyo, and Masato Nogawa, Yokohama, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan
Filed Jun. 4, 1979, Ser. No. 44,974
Claims priority, application Japan, Mar. 13, 1979, 54-9886
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—20



264,676
AWL
Bronislaw Sokolowski, 44 Aldrich St., Webster, Mass. 01570
Filed Dec. 17, 1979, Ser. No. 104,273
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—47

264,677
SCISSORS
Leroy R. Perry, Jr., 1301 E. Rubio St., Altadena, Calif. 91001
Continuation-in-part of Ser. No. 73,546, Sep. 5, 1979. This application Nov. 2, 1979, Ser. No. 90,543
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—57

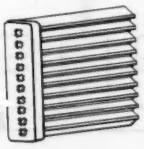
264,678
PIPE END PREPARATION TOOL
Henry Astle, Rancho Cordova, and John E. Pertle, Garden Valley, both of Calif., assignors to Tri Tool, Inc., Rancho Cordova, Calif.
Filed Dec. 3, 1979, Ser. No. 99,873
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—61



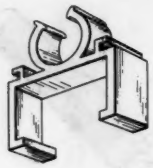
264,679
FISH HOOK SHARPENER
Gene G. Funkhouser, 5214 Keo Dr., Santa Barbara, Calif. 93111
Filed Nov. 16, 1979, Ser. No. 94,970
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62

264,680
LOCKING PIN
Bo G. Widen, Torshälla, Sweden, assignor to GKN-Stenman AB, Eskilstuna, Sweden
Filed Jan. 9, 1980, Ser. No. 110,726
Claims priority, application Sweden, Jul. 10, 1979, 791648
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—343

264,681
CONTAINER FOR PELLETED DRUGS
Roger W. Turley, 25 Farmerie Rd., Hundon, Sudbury, Suffolk, England
Filed Nov. 8, 1978, Ser. No. 958,952
Claims priority, application United Kingdom, May 9, 1978, 984511
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—339

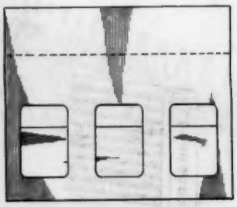


264,682
REBAR SUPPORT AND NAILING BLOCK HOLDER
David A. Van Doren, P.O. Box 1008, Hays, Kans. 67601
Filed Mar. 10, 1980, Ser. No. 128,491
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354

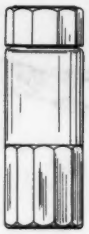


264,683
WIRE AND PLUMBING PROTECTION DEVICE
Vernon A. Searer, Elkhart, Ind., assignor to Elkhart Rivet & Register Co., Inc., Elkhart, Ind.
Filed Mar. 14, 1980, Ser. No. 130,427
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354

264,684
PACKAGING CARTON
Paul J. Hunckler, and John P. Hunckler, both of Huntington County, Ind., assignors to Hunckler Products, Inc., Huntington, Ind.
Filed Nov. 2, 1979, Ser. No. 90,541
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—346

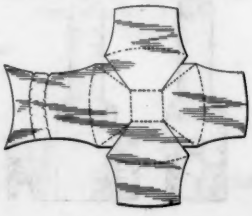


264,685
BOTTLE
Gilbert Ducros, 26170 Buis-les-Baronnies, France
Filed Oct. 25, 1977, Ser. No. 844,775
Claims priority, application France, Apr. 25, 1977, 48
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—390

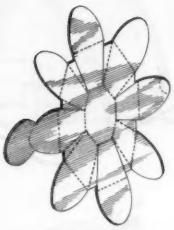


264,686
PACKAGING CUP
Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed Mar. 10, 1980, Ser. No. 129,400
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—429

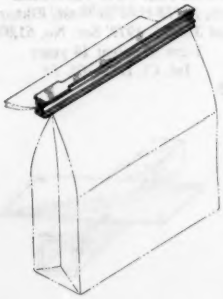
264,687
CONTAINER BLANK
John J. Austin, LaGrange, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Jan. 21, 1980, Ser. No. 113,569
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



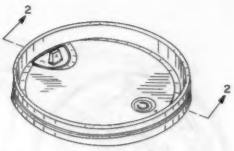
264,688
CONTAINER BLANK
John J. Austin, LaGrange, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Jan. 22, 1980, Ser. No. 114,192
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



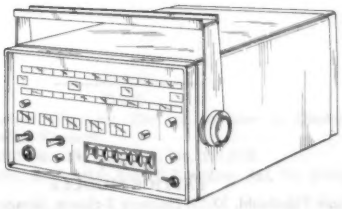
264,689
BAG FASTENER OR THE LIKE
David L. Miller, 18424 Domino St., Reseda, Calif. 91335
Filed Nov. 5, 1979, Ser. No. 90,928
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—434



264,690
TOP FOR A DRINK CUP
Connice W. Bagwell, Rte. 2, Box 346, Somerville, Ala. 35670
Continuation-in-part of Ser. No. 79,720, Sep. 28, 1979. This application Feb. 15, 1980, Ser. No. 121,900
The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—454



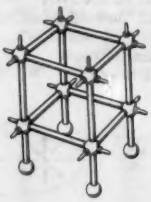
264,691
TELECOMMUNICATIONS TEST INSTRUMENT
Charles Volkland, San Jose, and Louis H. Zumbahlen, Jr., Boulder Creek, both of Calif., assignors to Halcyon, Inc., San Jose, Calif.
Filed Apr. 30, 1980, Ser. No. 136,986
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—75



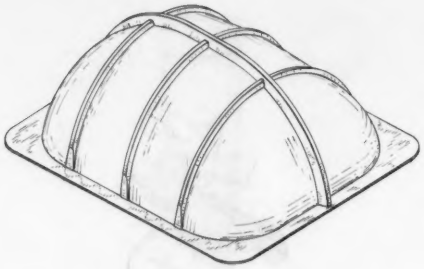
264,692
SUNBURST RING CROWN
Pearl Sandblom, 68A Mylod St., Norwood, Mass. 02062
Filed Sep. 20, 1979, Ser. No. 77,387
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D11—89

264,693
MEDAL
Pierre Rodier, Palaiseau, France, assignor to Helior S.A., Geneva, Switzerland
Filed Nov. 27, 1979, Ser. No. 98,119
Claims priority, application Switzerland, Jun. 1, 1979, 68877
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D11—106

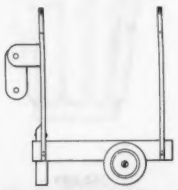
264,694
LATTICE MODULE
Yuzo Takahashi, 32-19, Daizawa 2-chome, Setagaya-ku, Tokyo, Japan (155)
Filed Jun. 1, 1979, Ser. No. 44,516
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—131



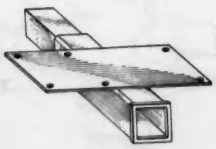
264,695
MINIATURE PLASTIC GREENHOUSE
Ronald C. Mackes, Crestone, Colo., assignor to BQP Industries, Inc., Denver, Colo.
Filed May 27, 1980, Ser. No. 153,046
Term of patent 14 years
Int. Cl. D11—*02*; D25—*03*
U.S. Cl. D11—145



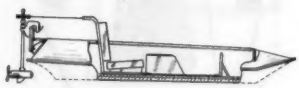
264,696
FIREWOOD CART
Kenneth E. Rahn, Rte. 2, W. 2727 N. Shore Dr., Onalaska, Wis. 54650
Filed Mar. 21, 1980, Ser. No. 133,486
Term of patent 3½ years
Int. Cl. D12—*02*
U.S. Cl. D34—24



264,697
COMBINED WINCH MOUNT AND DRAW BAR ADAPTER FOR VEHICLES
John W. Monteith, 28773 U.S. 20 West, Elkhart, Ind. 46514
Filed Jul. 26, 1979, Ser. No. 61,079
Term of patent 14 years
Int. Cl. D12—*05, 16*
U.S. Cl. D34—35

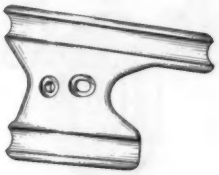


264,698
COMBINED UPPER HULL, INTERIOR AND MOTOR FOR A BOAT
Bobby G. Tindal, Rte. 1, Pelion, S.C. 29123
Filed Sep. 19, 1977, Ser. No. 834,698
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—302

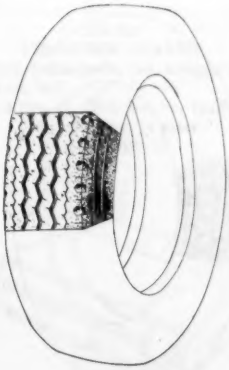


264,699
UTILITY CARRIER CART
Ralph A. Watkins, 113 R St., NE., Washington, D.C. 20002
Filed Jan. 20, 1975, Ser. No. 541,918
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—105

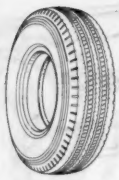
264,700
CABLE GUIDE FOR VARIABLE SPEED TRANSMISSION SUCH AS DERAILLEURS
Gilbert Geney, Seloncourt, France, assignor to Cycles Peugeot, Valentigney, France
Filed Aug. 8, 1979, Ser. No. 64,796
Claims priority, application France, Feb. 16, 1979, 384
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



264,701
TIRE
Michael R. Corner, Coventry, England, assignor to Dunlop Limited, London, England
Filed Dec. 28, 1979, Ser. No. 107,862
Claims priority, application United Kingdom, Jul. 10, 1979, 990633
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142

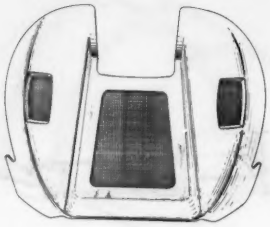


264,702
AUTOMOBILE TIRE
Yukio Kaga, Hiratsuka, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Jan. 7, 1980, Ser. No. 110,197
Claims priority, application Japan, Jul. 9, 1979, 54-28544
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142

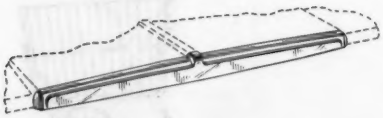


264,703
TIRE
Eiji Nakasaki, Kakogawa, Japan, assignor to Dunlop Limited, London, England
Filed May 31, 1979, Ser. No. 44,358
Claims priority, application Japan, Dec. 22, 1978, 53-54000
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

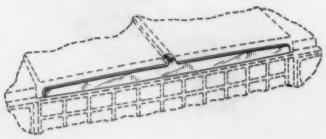
264,704
MOTORCYCLE FAIRING OR SIMILAR ARTICLE
William V. Rehberg, 10315 SE. 16th, Bellevue, Wash. 98004
Filed Jun. 29, 1979, Ser. No. 53,296
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—186



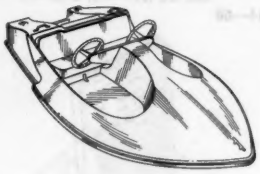
264,705
TRIM PIECE FOR AN AUTOMOBILE HOOD
Ulric W. Trombley, R.R. #1, Chisago City, Minn. 55013, and Richard J. Nozel, 354 Edith Dr., West St. Paul, Minn. 55118
Filed Mar. 20, 1980, Ser. No. 132,087
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—190



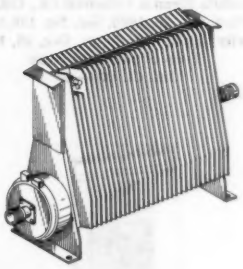
264,706
TRIM PIECE FOR AN AUTOMOBILE HOOD
Ulric W. Trombley, R.R. #1, Chisago City, Minn. 55013, and Richard J. Nozel, 354 Edith Dr., West St. Paul, Minn. 55118
Filed Mar. 20, 1980, Ser. No. 132,091
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—190



264,707
BOAT
James F. Bettis, Elgin, Ill., assignor to Skivette Corporation, Elgin, Ill.
Filed Jun. 7, 1979, Ser. No. 46,241
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—300

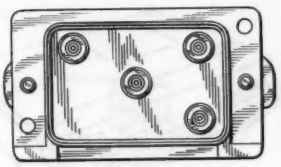


264,708
RADIATOR FOR RF LINE TERMINATION
Leo Lesyk, Walton Hills, Ohio, assignor to Bird Electronic Corporation, Solon, Ohio
Filed Dec. 12, 1979, Ser. No. 103,075
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—4

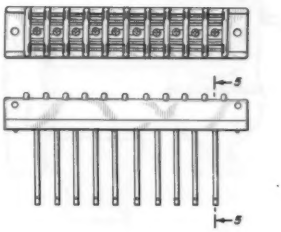


264,709
RADIATOR FOR AN RF LINE TERMINATION
Leo Lesyk, Walton Hills, Ohio, assignor to Bird Electronic Corporation, Solon, Ohio
Filed Dec. 12, 1979, Ser. No. 103,076
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—4

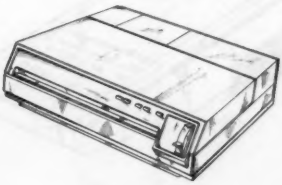
264,710
C.A.T.V. SIGNAL SPLITTER
David F. Shu, Cook County, Ill., assignor to TDS, Inc., Elk Grove Village, Ill.
Filed May 9, 1979, Ser. No. 37,404
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—11



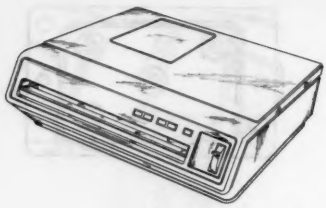
264,711
VERSATILE ELECTRICAL TERMINAL BLOCK
Lee M. Ford, 3945 Michael, Los Angeles, Calif. 90066
Filed Nov. 8, 1979, Ser. No. 92,565
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



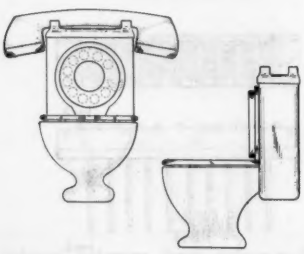
264,712
VIDEO DISC PLAYER
Donald B. O'Leary, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.
Filed Feb. 21, 1980, Ser. No. 122,960
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1



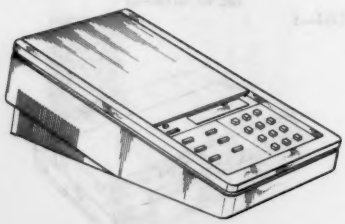
264,713
VIDEO DISC PLAYER
Donald B. O'Leary, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.
Filed Feb. 21, 1980, Ser. No. 122,961
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1



264,714
TELEPHONE
Jon Tyree, 208 Lugonia St.-Apartment A, Newport Beach, Calif. 92663
Filed Jul. 24, 1980, Ser. No. 171,664
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

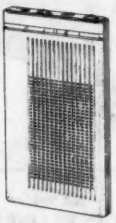


264,715
TELEPHONE BASE
Peter D. H. Trussler, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Aug. 13, 1979, Ser. No. 66,471
Claims priority, application Canada, Aug. 8, 1979, 08-08-79-3
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



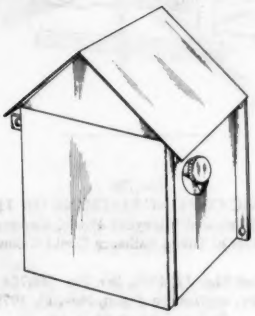
264,716
CLOCK RADIO
Iwao Nakajima, Ikoma, and Benito Mishiro, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jun. 10, 1980, Ser. No. 158,161
Claims priority, application Japan, Dec. 20, 1979, 54-53708
Term of patent 14 years
Int. Cl. D14—*03;* D10—*01*
U.S. Cl. D14—68

264,717
RADIO RECEIVER
Masanori Hamada, Yao; Yoshiyuki Saigo, Hirakata; Benito Mishiro, Sakai, and Kikuo Ohta, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 10, 1980, Ser. No. 158,162
Claims priority, application Japan, Dec. 20, 1979, 54-53691
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68

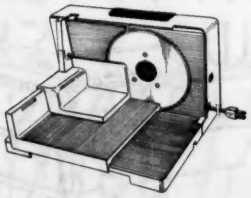


264,718
CLOCK RADIO
Kunio Hoshino, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jun. 10, 1980, Ser. No. 158,160
Claims priority, application Japan, Dec. 20, 1979, 54-53706
Term of patent 14 years
Int. Cl. D14—*03;* D10—*01*
U.S. Cl. D14—70

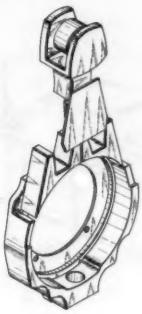
264,719
AIR COMPRESSOR HOUSING
Martin R. Ehlers, 800 W. Ford Valley Rd., Knoxville, Tenn. 37920
Filed Mar. 3, 1980, Ser. No. 126,381
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—9



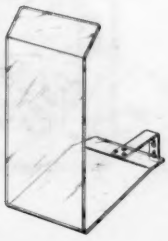
264,720
ELECTRIC FOOD SLICER
Michio Fuse, Nagoya, Japan, assignor to Kabushikikaisha AichidenkikosaKusho, Japan
Filed Jun. 7, 1979, Ser. No. 46,528
Claims priority, application Japan, Mar. 30, 1979, 54-13125
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—97



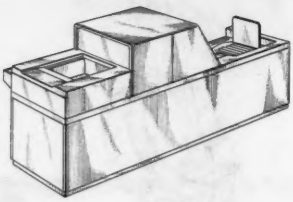
264,721
HOUSING FOR ABRASIVE BELT SANDING MACHINE
Aaron P. Rasmussen, 9606 Candy La., La Mesa, Calif. 92041
Filed Mar. 18, 1980, Ser. No. 131,284
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126



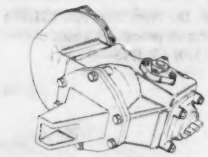
264,722
JEWELER'S SHIELD
Michael P. Summers, 1209 E. Broadway, Apt. 22D, Hewlett, N.Y. 11557, and Kenneth Bishop, 30 Saddlerock Rd., Valley Stream, N.Y. 11581
Filed Mar. 18, 1980, Ser. No. 131,474
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—138

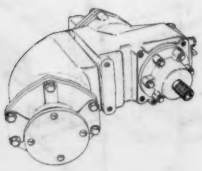


264,723
MERCHANDISE BAGGING DEVICE
Eiichi Tsujimoto, Kobe, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan
Filed Oct. 22, 1979, Ser. No. 87,299
Claims priority, application Japan, Apr. 13, 1979, 54-15284
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—145

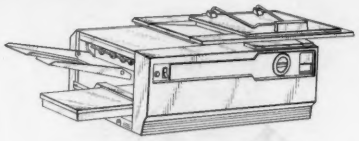


264,724
TRANSMISSION FOR BOATS
Kjell Borgersen, Hjälteby, and Lennart Brandt, Fjäras, both of Sweden, assignors to AB Volvo Penta, Gothenburg, Sweden
Filed Dec. 19, 1979, Ser. No. 105,242
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—149

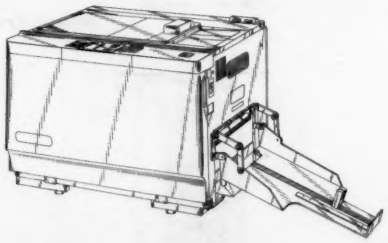




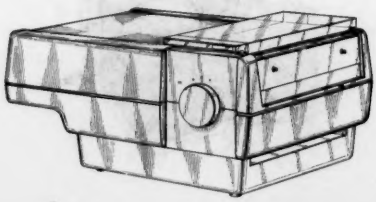
264,725
ELECTROPHOTOGRAPHIC COPIER
Hiroyuki Tokuda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 14, 1980, Ser. No. 140,105
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



264,726
ELECTRONIC COPYING MACHINE OR THE LIKE
Kunio Hara, Chiba, and Hideyuki Horie, Kamagaya, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed May 12, 1980, Ser. No. 148,704
Claims priority, application Japan, Nov. 16, 1979, 54-47760
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31

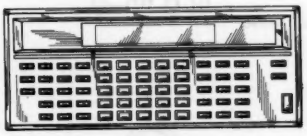


264,727
ELECTRONIC COPYING MACHINE OR THE LIKE
Yozo Matsuzaka, Yokohama, and Kunio Hara, Chiba, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed May 28, 1980, Ser. No. 153,953
Claims priority, application Japan, Dec. 12, 1979, 54-51633
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31

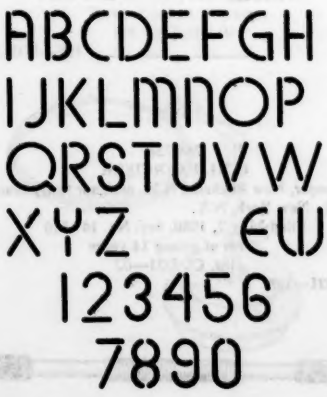


264,728
CAMERA TRIPOD OR THE LIKE
Osamu Iwasaki, Tokorozawa, Japan, assignor to Slik Tripod Co., Ltd., Saitama, Japan
Filed Jan. 4, 1979, Ser. No. 876
Claims priority, application Japan, Sep. 12, 1978, 53-38566
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—45

264,729
ELECTRONIC CALCULATOR WITH TIMEPIECE
Yoshiaki Kobayashi, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Aug. 3, 1979, Ser. No. 58,504
Term of patent 14 years
Int. Cl. D18—*01*; D10—*2*
U.S. Cl. D18—2

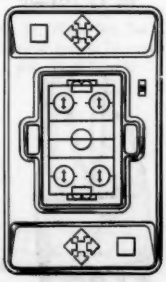


264,730
TYPE FONT
Donald J. Carlyon, 1980 Hotchkiss Rd., Bay City, Mich. 48706
Filed May 12, 1980, Ser. No. 148,984
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—26

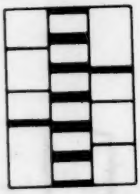


264,731
DISPLAY CARD HOLDER
Bernard E. Shuman, 3230 Clubhouse Rd., Merrick, N.Y. 11566
Filed Feb. 4, 1980, Ser. No. 118,628
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D20—40

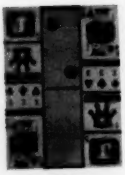
264,732
ELECTRONIC HAND-HELD HOCKEY GAME HOUSING OR THE LIKE
Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.
Filed Feb. 4, 1980, Ser. No. 117,999
Claims priority, application Japan, Dec. 17, 1979, 54-053040
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



264,733
PLAYING CARD
Samuel Nugroho, Djalan Mangga Besar, Raya No. 64, Djakarta, Indonesia
Filed May 21, 1980, Ser. No. 151,891
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—42

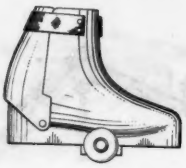


264,734
SET OF PLAYING CARDS
Samuel Nugroho, Djalan Mangga Besar, Raya No. 64, Djakarta, Indonesia
Filed May 21, 1980, Ser. No. 151,896
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—42



264,735
NOVELTY BINOCULARS
Anna M. Ocker, 1857 Santa Gertrudis Dr., Bismarck, N. Dak. 58501
Filed Apr. 14, 1980, Ser. No. 140,230
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

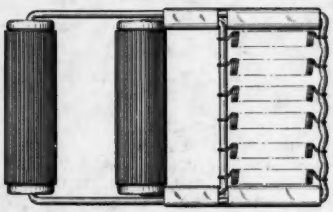
264,736
EXERCISE BOOT
Robert C. Wolf, 28 Muirfield Rd., Rockville Center, N.Y. 11570
Filed May 22, 1980, Ser. No. 152,418
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—196



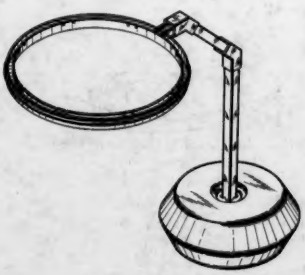
264,737
HAND GRIP EXERCISER
Marvin Cooper, New Rochelle, N.Y., assignor to Dynamic Classics, Ltd., New York, N.Y.
Filed May 7, 1980, Ser. No. 147,512
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—198

264,738
COIL EXERCISER
Marvin Cooper, New Rochelle, N.Y., assignor to Dynamic Classics, Ltd., New York, N.Y.
Filed May 7, 1980, Ser. No. 147,516
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—198

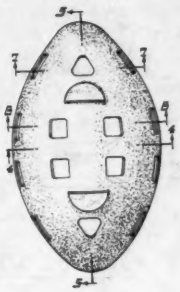
264,739
ADJUSTABLE HAND GRIP EXERCISER
Marvin Cooper, New Rochelle, N.Y., assignor to Dynamic Classics, Ltd., New York, N.Y.
Filed May 7, 1980, Ser. No. 147,517
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—198



264,740
WATER BASKETBALL GAME GOAL
Dennis H. Merino, 2873 King Edward Dr., El Dorado Hills, Calif. 95630, and J. Clyde Ralph, 2773 Curtis Way, Sacramento, Calif. 95818
Filed Dec. 26, 1979, Ser. No. 106,458
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—201



264,741
KICKING-PRACTICE FOOTBALL
John C. Patton, 1460 Tulane, Vidor, Tex. 77662
Filed Jul. 23, 1979, Ser. No. 59,671
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—204

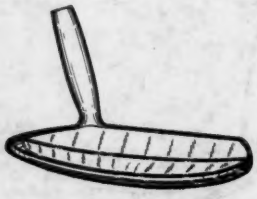


264,742
PUTTER
Truett P. Mills, Tuscaloosa, Ala., assignor to Questor Corporation, Toledo, Ohio
Filed Aug. 11, 1980, Ser. No. 177,052
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217

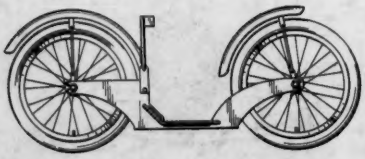
264,743
PUTTER
Truett P. Mills, Tuscaloosa, Ala., assignor to Questor Corp., Toledo, Ohio
Filed Aug. 11, 1980, Ser. No. 177,053
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217

264,744
PUTTER
Truett P. Mills, Tuscaloosa, Ala., assignor to Questor Corporation, Toledo, Ohio
Filed Aug. 11, 1980, Ser. No. 177,054
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217

264,745
PUTTER
Truett P. Mills, Tuscaloosa, Ala., assignor to Questor Corporation, Toledo, Ohio
Filed Aug. 11, 1980, Ser. No. 177,055
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217



264,746
ROLLER SKATE
Wallace E. Orth, Sublette, Kans., assignor to Skee-Bike, Inc., Sublette, Kans.
Filed May 19, 1980, Ser. No. 151,524
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—226

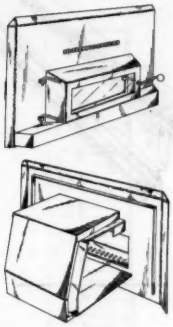


264,747
WALKING TOY
Marc S. Seltzer, 6885 Hunters Knoll, Atlanta, Ga. 30328
Filed Mar. 3, 1980, Ser. No. 126,530
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—240

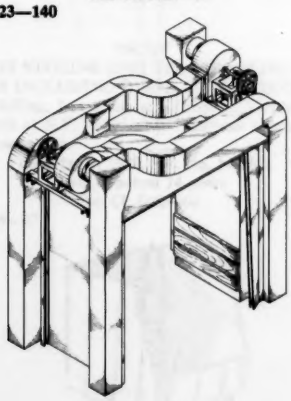
264,748
HOLSTER
Paris Theodore, 24 E. 73rd St., New York, N.Y. 10021
Filed Aug. 1, 1980, Ser. No. 174,328
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13

264,749
COMBINED LAVATORY AND SUPPORT PEDESTAL
Hertha A. Bengtson, Mölle, Sweden, assignor to American Standard Inc., New York, N.Y.
Filed Aug. 27, 1979, Ser. No. 70,272
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 20AR250
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—61

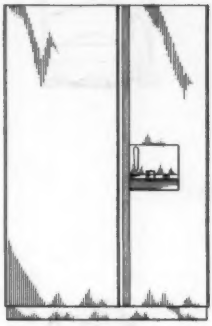
264,750
FIREPLACE INSERT
Melvin V. Horpestad, 3521 River Rd. West, R.R. 1, Delta, British Columbia, Canada (V4K 3N2)
Filed Mar. 4, 1980, Ser. No. 127,229
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—95



264,751
CONDITIONED AIR VESTIBULE
George R. Smith, Brookeville, Md., assignor to HCR Incorporated, Falls Church, Va.
Filed Apr. 14, 1980, Ser. No. 140,200
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—140



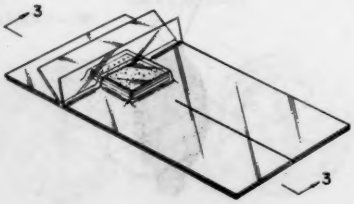
264,752
PHARMACEUTICAL DISPENSING CABINET
Samuel S. Leotta, Jenkintown, Pa., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Aug. 10, 1979, Ser. No. 65,681
Term of patent 3½ years
Int. Cl. D24—*99*
U.S. Cl. D24—1.1



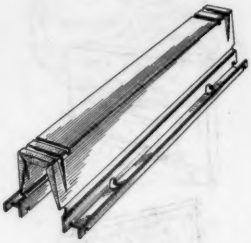
264,753
HAND OPERATED VACUUM EXHAUSTER
An C. Wu, 4F-1, No. 58, Hsin-Yi Rd., Sec. 4, Taipei, Taiwan
Filed Feb. 11, 1980, Ser. No. 120,310
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—34

264,754
MANUAL MASSAGE INSTRUMENT
Jean-Pierre Vitrac, Paris, France, assignor to Pierre Fabre S.A., Paris, France
Filed Jan. 28, 1980, Ser. No. 116,254
Claims priority, application France, Aug. 8, 1979, 42697
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36

264,755
SECURING DEVICE FOR CATHETER
Birgitta Olson, Lund, Sweden, assignor to Landstingens Inkopscentral, Lic., Solna, Sweden
Filed May 29, 1979, Ser. No. 43,047
Claims priority, application Sweden, Nov. 28, 1978, 78-2780
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—49

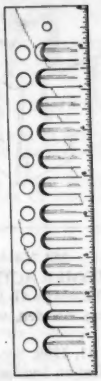


264,756
BEAM FOR FRAME STRUCTURE
Ingvar K. Andersson, Süffle, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 27, 1980, Ser. No. 125,041
Claims priority, application Sweden, Aug. 29, 1979, 79-1907
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—73

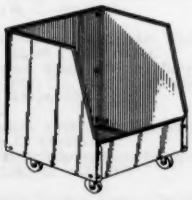


264,757
MASCARA APPLICATOR
John E. Jedzinak, Suffern; Ralph J. Cataneo, Brooklyn, both of N.Y., and Eustace Fotiu, Mahwah, N.J., assignors to Revlon, Inc., New York, N.Y.
Filed May 12, 1980, Ser. No. 149,081
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7

264,758
HOLDER FOR SKEINS OF FLOSS
Lois J. Walker, 6708 Blue Spruce Ct., Union Lake, Mich. 48085
Filed Mar. 7, 1980, Ser. No. 128,026
Term of patent 14 years
Int. Cl. D28—*99*
U.S. Cl. D28—64

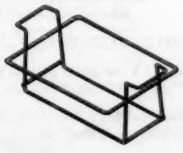


264,759
CART FOR STORING AND TRANSPORTING SOLID FUELS INCLUDING WOOD LOGS AND COAL
Glenn F. Schilling, Lancaster, and James C. Varble, Clarence Center, both of N.Y., assignors to Lancaster Fabricating Co., Inc., Lancaster, Pa.
Filed May 9, 1980, Ser. No. 148,542
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—17

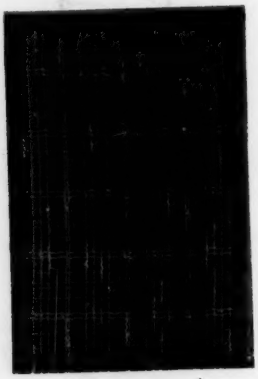


264,760
FLUID CONTAINER
Sheldon Berney, Winnipeg, and John Howard, Scarborough, both of Canada, assignors to Reliance Products Ltd., Winnipeg, Canada
Filed Mar. 10, 1980, Ser. No. 128,950
Term of patent 14 years
Int. Cl. D9—*02*
U.S. Cl. D34—39

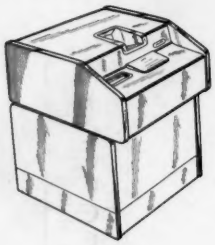
264,761
BASKET FOR COMPUTER FORMS OR THE LIKE
Michael A. Dekarski, 13419 Larkin Dr., Minnetonka, Minn. 55343
Filed Jun. 16, 1980, Ser. No. 160,138
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D34—42



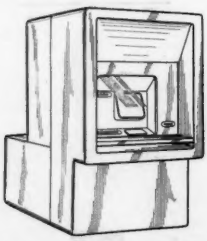
264,762
CURTAIN MATERIAL
Haas Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed Jan. 9, 1980, Ser. No. 110,758
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1979, URA752/79
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



264,763
INDOOR CUSTOMER ACTIVATED BANKING MACHINE TERMINAL OR THE LIKE
Ingvar Freijd, Linköping, Sweden, assignor to Datasaab AB, Jarfalla, Sweden
Filed Mar. 11, 1980, Ser. No. 129,307
Claims priority, application Sweden, Sep. 14, 1979, 792042
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—28



264,764
OUTDOOR CUSTOMER ACTIVATED BANKING MACHINE TERMINAL OR THE LIKE
Ingvar Freijd, Linköping, Sweden, assignor to Datasaab AB, Jarfalla, Sweden
Filed Mar. 11, 1980, Ser. No. 129,308
Claims priority, application Sweden, Sep. 14, 1979, 7920430
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—28



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TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF JUNE, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Betong AB: *See—*
Westberg, Stefan, 4,332,118, Cl. 52-263.000.

A & H Mfg. Co.: *See—*
Feibelman, Jeffrey A., 4,332,320, Cl. 206-45.140.

A. Nattermann & Cie. GmbH: *See—*
Ghyczy, Miklos; Erdos, Adorjan; Heidemann, Gunter; and Ritzmann, Gotz, 4,332,795, Cl. 424-199.000.

A. O. Smith Corporation: *See—*
Kozak, Norman M., 4,333,002, Cl. 219-321.000.

A. O. Smith Harvestore Products, Inc.: *See—*
Peters, Anthony J., 4,332,484, Cl. 366-137.000.

A/S Haustrup Plastic: *See—*
Ingemann, Ole, 4,332,332, Cl. 220-276.000.

Abbott Laboratories: *See—*
Armstrong, Alan S., 4,332,890, Cl. 435-7.000.
Williams, John W.; and Becker, Frank C., 4,332,821, Cl. 424-322.000.

Aberle, Claus; Ruger, James F.; and Schulz, Klaus-Peter, to Eltro GmbH. Radiometer. 4,332,168, Cl. 374-130.000.

Adams, John O.: *See—*
Ford, James M.; and Adams, John O., 4,332,661, Cl. 204-253.000.

Adhia, Bharat J.: *See—*
deMonterey, Francis G.; Adhia, Bharat J.; and Johnson, David M., 4,332,354, Cl. 241-16.000.

ADI-Aeroponics Growth Ltd.: *See—*
Nir, Isaac, 4,332,105, Cl. 47-1.00R.

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Advanced Catheter Systems, Inc.: *See—*
Lundquist, Ingemar, 4,332,254, Cl. 128-344.000.

AFGA-Gevaert AG: *See—*
Luedemann, Heinz; and Schneider, Klaus, 4,332,339, Cl. 226-195.000.

Afros S.r.l.: *See—*
Fiorentini, Carlo, 4,332,335, Cl. 222-145.000.

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Kurane, Ryuichiro; Suzuki, Tomoo; and Takahara, Yoshimasa, 4,332,904, Cl. 435-262.000.

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Ahne, Hellmut; Kuhn, Eberhard; Rubner, Roland; and Schmidt, Erwin, to Siemens Aktiengesellschaft. Method for the manufacture of highly heat-resistant relief structures. 4,332,883, Cl. 430-322.000.

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Antonas, Ioannis A.; Allam, Rodney J.; and Hegarty, William P., 4,332,598, Cl. 62-17.000.
Iacoviello, John G., 4,332,850, Cl. 428-288.000.
Starner, William E.; and Yext, Walter F., 4,332,736, Cl. 260-403.000.

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Nakazawa, Takaaki; Nagata, Takenori; Kuroda, Yasuo; and Suzuki, Toshio, 4,332,412, Cl. 296-29.000.

Ajay Enterprises, Inc.: *See—*
Rader, Richard S., 4,332,283, Cl. 150-1.50R.

Ajinomoto Company, Inc.: *See—*
Takahashi, Satoji; and Toi, Koji, 4,332,718, Cl. 260-112.50R.

Akagi, Motoo: *See—*
Hayashi, Nobuaki; Akagi, Motoo; Miura, Kiyoshi; and Odaka, Yoshiyuki, 4,332,874, Cl. 430-28.000.

Aker, Wesley E.: *See—*
Margalit, Nehemiah; Joshi, Ashok V.; Aker, Wesley E.; and Johnson, Dennis P., 4,332,869, Cl. 429-194.000.

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Siga, Tetsuo; Kinoshita, Shozo; Ito, Yoshinobu; and Akiyama, Minoru, 4,332,889, Cl. 430-583.000.

Aktiengesellschaft Fr. Mettler's Sohne Maschinenfabrik: *See—*
Hauri, Tobias, 4,332,065, Cl. 28-225.000.

Akzo N.V.: *See—*
Gerlach, Klaus; Behnke, Joachim; Rosener, Wolfgang; and Hohm, Ewald, 4,332,686, Cl. 210-651.000.
Henne, Werner; Bandel, Werner; and Dunweg, Gustav, 4,332,752, Cl. 264-41.000.
Wegerhoff, Arno; Zengel, Hans; Brodowski, Walter; Beck, Heinz; Seeberger, Ernst; Steenken, Gerhard; and Hillermeider, Karlheinz, 4,332,600, Cl. 65-2.000.
Wegerhoff, Arno; Zengel, Hans; Brodowski, Walter; Beck, Heinz; Seeberger, Ernst; Steenken, Gerhard; and Hillermeider, Karlheinz, 4,332,601, Cl. 65-2.000.

Alaimo, Robert J.; Gray, Joseph E.; and Klein, George M., to Morton-Norwich Products, Inc. Antifungal compound. 4,332,735, Cl. 549-496.000.

Albom, Bradley S., to Chevron Research. Sulfur-aggregate compositions and methods for preparing. 4,332,912, Cl. 501-140.000.

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Allam, Rodney J.: *See—*
Antonas, Ioannis A.; Allam, Rodney J.; and Hegarty, William P., 4,332,598, Cl. 62-17.000.

Allen, Gary F., to Mobay Chemical Corporation. Low temperature storage stable liquid diphenylmethane diisocyanates. 4,332,742, Cl. 260-453.0SP.

Allen, Robert H.; and Seligman, Paul A., to University Patents, Inc. Immunoassay for measurement of reticulocytes, and immunoreactive reagents for use therein. 4,332,785, Cl. 424-1.000.

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Allied Corporation: *See—*
Hobday, Robert W., 4,332,778, Cl. 423-132.000.
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Wooldridge, James E., 4,332,597, Cl. 55-124.000.

Almo Manifold & Tool Co.: *See—*
Six, Rudolph E., 4,333,043, Cl. 318-591.000.

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Alston, Arthur: *See—*
Chin, Thomas G.; and Alston, Arthur, 4,332,159, Cl. 73-64.200.

Alt, Gerhard H., to Monsanto Company. Herbicidal 2-haloacetantlides. 4,332,614, Cl. 71-118.000.

Alt, William P. Adjustable and stationary holding apparatus for a swimming pool surface skim net. 4,332,683, Cl. 210-499.000.

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Amana Refrigeration, Inc.: *See—*
Larsen, Wallace L.; and Duncan, Eliot R., 4,332,992, Cl. 219-10.55R.

American Can Company: *See—*
Bean, William C.; and Tao, Thomas M., 4,332,756, Cl. 264-70.000.
Holbrook, Winnon G.; and Kettenhofen, Adrian J., 4,332,635, Cl. 156-256.000.
Howard, Thomas B.; and Puissant, Gerald H., 4,332,324, Cl. 206-389.000.
Lin, Stephen Y., 4,332,589, Cl. 8-557.000.

American Colloid Company: *See—*
Piepho, Ralf F., 4,332,693, Cl. 252-181.000.

American Cyanamid Co.: *See—*
Bentley, Terence J.; Gastrock, William H.; and Asato, Goro, 4,332,724, Cl. 260-326.00S.
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Hensel, Roy; Biller, Leonhard F.; and Danson, Russell J., 4,332,454, Cl. 354-317.000.

American Hospital Supply Corporation: *See—*
Linsey, Mark, 4,332,333, Cl. 222-83.000.

American Standard Inc.: *See—*
Safford, Laurance F., 4,332,977, Cl. 178-22.140.

AMP Incorporated: *See—*
Barkus, Lee A.; and Simons, Craig W., 4,332,849, Cl. 428-188.000.
Bobb, Clifford F.; and Cobaugh, Robert F., 4,332,431, Cl. 339-74.00R.
Hoffman, Norman E., 4,332,987, Cl. 200-16.00D.
Johnson, Keith, Jr.; Long, Robert A.; and Over, William R., 4,332,083, Cl. 29-749.000.

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Quan, Ronald; and Ryan, John O., 4,333,108, Cl. 358-145.000.
Sutterlin, Philip H., 4,333,177, Cl. 371-15.000.

Amwake, Harvey E., to Dresser Industries, Inc. Side bearing cage assembly. 4,332,202, Cl. 105-199.0CB.

Anand, Joginder N.; Revak, Timothy T.; and Rossini, Frank J., to Dow Chemical Company, The. High temperature battery cell comprising stress-free hollow fiber bundle. 4,332,868, Cl. 429-178.000.

Anatol, Jesus; Clenet, Yves; and Bourdiau, Georges, to Sucreries du Soissonnais et Compagnie Sucriere. Process for manufacturing phenoxylactic acids, their derivatives and products obtained thereby. 4,332,959, Cl. 560-60.000.

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Frisquet, Maurice, 4,332,274, Cl. 137-496.000.

Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Kneading and mixing machine. 4,332,480, Cl. 366-77.000.

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Anderson, Ardis L.: *See*—
McConaghy, James R.; and Anderson, Ardis L., 4,332,641, Cl. 201-17.000.

Anderson, Lloyd E.: *See*—
Bell, Dwain C.; and Anderson, Lloyd E., 4,332,371, Cl. 254-203.000.

Anderson, Richard J.; and Leippe, Michael M., to Zoecon Corporation. Compositions and use. 4,332,944, Cl. 546-272.000.

Ando, Kunio: *See*—
Kaku, Masaro; Ando, Kunio; Honda, Toyota; and Inoue, Fumio, 4,333,105, Cl. 358-67.000.

Ando, Masao; Hirota, Tetsuya; and Shioda, Katashi, to Mitsubishi Chemical Industries, Ltd. Adsorption separation method and apparatus thereof. 4,332,623, Cl. 127-46.200.

Ando, Takehiro: *See*—
Yoshimura, Junjiro; Furukawa, Akira; and Ando, Takehiro, 4,332,268, Cl. 137-81.100.

Ando, Yujiro: *See*—
Ohara, Katsunobu; Tanaka, Keiji; Ando, Yujiro; and Moriyama, Inao, 4,332,876, Cl. 430-68.000.

Andoh, Makoto, to Sumitomo Light Metal Industries, Ltd. Selective absorber of solar energy and process for producing same. 4,332,628, Cl. 148-6.200.

Andrasy, Ferenc: *See*—
Kuszmann, Janos; Medgyes, Gabor; Andrasy, Ferenc; and Berzsenyi, Pal, 4,332,818, Cl. 424-285.000.

Andre, Wolfram; and Muller, Hans, to International Standard Electric Corporation. Color-picture tube with an arrangement to compensate for misregister. 4,333,037, Cl. 315-3.000.

Andreas Stihl: *See*—
Itzrodt, Gerd, 4,332,220, Cl. 123-41.700.

Andren, Carl F.: *See*—
Mosley, William H., Jr.; and Andren, Carl F., 4,333,060, Cl. 331-1.00A.

Andresen, Herman J. Control system having squeeze type manual actuator. 4,332,177, Cl. 74-491.000.

Andrews, Ottie H. Wave-and-tide-pump apparatus and method thereof. 4,332,506, Cl. 405-77.000.

Antal, Michael J., to Mobil Oil Corporation. Catalytic dewaxing of middle distillates. 4,332,670, Cl. 208-68.000.

Antonas, Ioannis A.; Allam, Rodney J.; and Hegarty, William P., to Air Products and Chemicals, Inc. Process for treating industrial gas stream. 4,332,598, Cl. 62-17.000.

Anzai, Shiro: *See*—
Fukahori, Yoshihide; Katacka, Nobuyuki; and Anzai, Shiro, 4,332,918, Cl. 525-259.000.

Aoki, Katashi. Parison molding apparatus in an injection stretching blow molding machine. 4,332,544, Cl. 425-529.000.

Aoki, Kozo; Kojima, Tetsuro; Furutachi, Nobuo; and Sawada, Satoru, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material including an organic spirobis compound color coupler. 4,332,886, Cl. 430-551.000.

Aota, Koichi: *See*—
Hosomura, Hiroyoshi; Aota, Koichi; and Yoshimura, Eiji, 4,332,851, Cl. 428-325.000.

Aoyama, Takahiko; and Nakaya, Akira, to Kawasaki Jukogyo Kabushiki Kaisha. Motorcycle sprocket. 4,332,574, Cl. 474-161.000.

Aperavich, Steven M., to Medical Engineering Corporation. Method of preparing a resealable valve. 4,332,634, Cl. 156-145.000.

Appelmann, Horst, to C. J. Rush Limited. Collapsible revolving door. 4,332,108, Cl. 49-44.000.

Arai, Asajiro; and Ugai, Yasuo. Portable pulse meter. 4,332,258, Cl. 128-666.000.

Arai, Mamoru; Torikata, Akio; Enokita, Ryuzou; Haneishi, Tatsuo; and Nakajima, Mutsuo, to Sankyo Company Limited. Antibiotic substance. 4,332,902, Cl. 435-253.000.

Arai, Motonosuke. Expansion joints for roads. 4,332,504, Cl. 404-68.000.

Arms, John T.: *See*—
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,332,698, Cl. 252-430.000.

Armstrong, Alan S., to Abbott Laboratories. Detection of neisseria gonorrhoeae. 4,332,890, Cl. 435-7.000.

Armstrong, David A., to British Steel Corporation. Strip feeding. 4,332,357, Cl. 242-78.100.

Armstrong, Paul R.: *See*—
Mathews, Lemuel P.; Lohman, Charles A.; and Armstrong, Paul R., 4,333,170, Cl. 367-125.000.

Arnold, Erwin: *See*—
Friedli, Hans; and Arnold, Erwin, 4,332,660, Cl. 204-245.000.

Arnold, William A. Universal mechanical seal gland. 4,332,391, Cl. 277-11.000.

Arora, Mulk R.; Paquette, Edward J.; and McPherson, Allan B., to Sprague Electric Company. AC Etching of aluminum capacitor foil. 4,332,652, Cl. 204-129.750.

Arora, Mulk R.: *See*—
Bemis, Richard A.; Hutchins, Clinton E.; Markland, Edward J.; and Arora, Mulk R., 4,332,651, Cl. 204-129.900.

Artale, Richard: *See*—
Linton, Robert; Asbury, Frank; and Artale, Richard, 4,332,548, Cl. 431-289.000.

ASA S.A.: *See*—
Bru, Christian; and Dupeuble, Jean-Claude, 4,332,132, Cl. 57-280.000.

Asahi Glass Company, Ltd.: *See*—
Baba, Morimitsu, 4,332,281, Cl. 141-1.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Hamanaka, Katsuhiko; Iwaisako, Toshiyuki; Masamoto, Junzo; and Yoshida, Koichi, 4,332,644, Cl. 203-46.000.
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,332,665, Cl. 204-296.000.
Saitoh, Akira; Yamori, Akio; and Ibaragi, Toshio, 4,332,858, Cl. 428-412.000.
Siga, Tetsuo; Kinoshita, Shozo; Ito, Yoshinobu; and Akiyama, Minoru, 4,332,889, Cl. 430-583.000.

Asai, Toshihiro: *See*—
Inoue, Kimio; Ogawa, Katsumi; Fukui, Tsugushi; Asai, Toshihiro; and Hashizume, Shinji, 4,332,481, Cl. 366-84.000.

Asaka Company Limited: *See*—
Koiwa, Yoshinori; Oka, Daishiro; and Takeda, Shoroku, 4,333,103, Cl. 358-19.000.

Asano, Kiro; Tamura, Humio; Tanaka, Hiromitsu; and Enomoto, Satoru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Chlorambucil derivatives. 4,332,797, Cl. 424-238.000.

Asato, Goro: *See*—
Bentley, Terence J.; Gastrock, William H.; and Asato, Goro, 4,332,724, Cl. 260-326.00S.

Asbury, Frank: *See*—
Linton, Robert; Asbury, Frank; and Artale, Richard, 4,332,548, Cl. 431-289.000.

ASEA Aktiebolag: *See*—
Asplund, Gunnar, 4,333,137, Cl. 363-54.000.
Madsen, Kristian D., 4,333,027, Cl. 310-61.000.
Nordvall, Jan O., 4,332,154, Cl. 72-31.000.

Ashby, George M., Jr. Backing stabilizer. 4,332,396, Cl. 280-474.000.

Ashland Oil, Inc.: *See*—
Myers, George D., 4,332,673, Cl. 208-120.000.

Asplund, Gunnar, to ASEA Aktiebolag. Thyristor switch with transient protection and RF interference suppression. 4,333,137, Cl. 363-54.000.

Aspnes, David E.; and Bagley, Brian G., to Bell Telephone Laboratories, Incorporated. Method for optical monitoring in materials fabrication. 4,332,833, Cl. 427-8.000.

Athe, Christian: *See*—
Reynard, Remi; Athe, Christian; and Aubert, Jean-Paul, 4,332,509, Cl. 405-168.000.

Atlantic Richfield Company: *See*—
Statton, Gary L.; and Harris, Stephen H., 4,332,741, Cl. 260-453.0SP.
Warfel, David R., 4,332,760, Cl. 264-143.000.

ATO Chimie: *See*—
Foy, Paul; Jungblut, Camille; and Deleens, Gerard, 4,332,920, Cl. 525-408.000.

Atsumi, Toshio; Takebayashi, Yoshiaki; and Kiyohara, Takao, to Sumitomo Chemical Company, Limited. Antitumor and immunosuppresive 4-carbamoyl imidazolium-5-olate derivatives, pharmaceutical composition and production thereof. 4,332,806, Cl. 424-273.00R.

Aubert, Jean-Paul: *See*—
Reynard, Remi; Athe, Christian; and Aubert, Jean-Paul, 4,332,509, Cl. 405-168.000.

Auld, David L.; and Waugh, Robert E., to D. L. Auld Company, The. Method for making decorative emblems. 4,332,074, Cl. 29-527.400.

Auriemma, Joseph F., to Ciba-Geigy Corporation. Cam lock for a spigot. 4,332,403, Cl. 285-189.000.

Avon Products, Inc.: *See*—
Linton, Robert; Asbury, Frank; and Artale, Richard, 4,332,548, Cl. 431-289.000.

Ayer, George E., to Bunker Ramo Corporation. Medical clip and electrode constructions. 4,332,257, Cl. 128-640.000.

Azam, Guy: *See*—
Bensussan, Andre; and Azam, Guy, 4,332,091, Cl. 34-1.000.

B. F. Goodrich Company, The: *See*—
Fisher, John M., 4,332,049, Cl. 441-80.000.

B. V. Koninklijke Maatschappij "de Schelde": *See*—
Broodman, Johannus J., 4,332,156, Cl. 72-264.000.

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Baba Seisakusho Co., Ltd.: *See*—
Baba, Morimitsu, 4,332,281, Cl. 141-1.000.

Backman, Keith C.: *See*—
Ptashne, Mark; Lauer, Gail D.; Roberts, Thomas M.; and Backman, Keith C., 4,332,892, Cl. 435-68.000.

Bacsik, George J., to Exxon Research & Engineering Co. Process and apparatus for furnace operation with gas seal. 4,332,546, Cl. 431-5.000.

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Aspnes, David E.; and Bagley, Brian G., 4,332,833, Cl. 427-8.000.

Bahre, Karl; Boer, Werner; Richter, Jorg; Seebacher, Gerald; and Warnke, Hans, to Kloeckner-Werke AG. Scraper chain conveyor. 4,332,317, Cl. 198-734.000.

Bailey, Escar L.; and Walker, Clifford G., to United States of America, Army. Directional two axis optical inclinometer. 4,332,090, Cl. 33-366.000.

Baker Industries, Inc.: *See*—
Kolm, Eric A.; and Kolm, Henry H., 4,333,029, Cl. 310-329.000.
Raber, Samuel; and Ellner, Irving L., 4,333,093, Cl. 340-566.000.

Baker International Corporation: *See*—
Baker, John R., 4,332,410, Cl. 294-86.180.
Evans, Robert W., 4,332,267, Cl. 137-1.000.

Baker, John R., to Baker International Corporation. Retrieving tool for well packer. 4,332,410, Cl. 294-86.180.

Baker, Richard H. Solar powered automatic turn-on control (SPA-TOC) unit and method. 4,333,136, Cl. 363-43.000.

Baker, Robert L. Collapsible tent for truck beds. 4,332,265, Cl. 135-3.00A.

Bakonyi, Anna: *See*—
Fischer, Janos; Rozsa, Laszlo; Vago, Pal; Bakonyi, Anna; and Fazekas, Gabor, 4,332,725, Cl. 548-533.000.

Balcerski, James S.: *See*—
Thibodeau, Michael J.; and Balcerski, James S., 4,332,779, Cl. 423-321.00R.

Balde, John W.; Spencer, Robert A.; and Thompson, Richard K., Jr., to Western Electric Co., Inc.; and Bell Telephone Laboratories. Termination of flat flexible cables. 4,332,433, Cl. 339-99.00R.

Ballard, Norman E., to Rolls-Royce Limited. Thermal barrier coating. 4,332,618, Cl. 106-84.000.

Banc-By-Phone Corporation: *See*—
Cave, Ellis K., 4,333,056, Cl. 330-129.000.

Bandel, Werner: *See*—
Henne, Werner; Bandel, Werner; and Dunweg, Gustav, 4,332,752, Cl. 264-41.000.

Bannister, Clifford R. Collapsible exercise back pack. 4,332,379, Cl. 272-119.000.

Banucci, Eugene G.: *See*—
Boldebuck, Edith M.; and Banucci, Eugene G., 4,332,708, Cl. 524-376.000.

Baragar, Harold A.; and Toovey, Kenneth S. Penetrometer. 4,332,160, Cl. 73-84.000.

Barber-Greene Company: *See*—
Binz, Lee V., 4,332,478, Cl. 366-4.000.

Barbero, Aquilino: *See*—
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,332,487, Cl. 400-126.000.

Barclay, John A.; and Steyert, William A., to United States of America, Energy. Active magnetic regenerator. 4,332,135, Cl. 62-3.000.

Barer, Sol J., to Celanese Corporation. Insecticidal compositions. 4,332,817, Cl. 424-285.000.

Barkus, Lee A.; and Simons, Craig W., to AMP Incorporated. Cold shrink cable repair device. 4,332,849, Cl. 428-188.000.

Barlow, Anthony: *See*—
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,332,957, Cl. 556-446.000.

Barmag Barmer Maschinenfabrik AG: *See*—
Schipper, Heinz; Hartig, Wolfgang; Weber, Klaus; Blumberg, Josef; and Wessolowski, Bernd, 4,332,129, Cl. 57-105.000.

Barnes, Robert W. Motor vehicle fuel-waste indicator. 4,333,070, Cl. 340-52.00R.

Barnow, Charles A. Transfer case conversion kit. 4,332,304, Cl. 180-233.000.

Barozzi, Gian P.; and Goreschi, Giancarlo, to Xelavis S.A. Device for the control of the position of the type carrying element in typewriters. 4,332,488, Cl. 400-161.500.

Barozzi, Gian P.; and Horeschi, Giancarlo, to Xelavis S.A. Device for the feed and motion reversal of the ribbon for typewriter cartridges and cartridge therefore. 4,332,491, Cl. 400-208.000.

Barthe, Marie P.: *See*—
Meunier, Jean P.; Barthe, Marie P.; Have, Serge; and Frumen, Bernard, 4,332,754, Cl. 264-45.500.

Barton, Joseph J., IV; and Boyd, Bobby G. Wet rope weed killer. 4,332,106, Cl. 47-1.500.

Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., to Xerox Corporation. Interactive user-machine interface method and apparatus for copier/duplicator. 4,332,464, Cl. 355-14.00C.

Baset, Zeinab, to Exxon Research & Engineering Co. Removal of basic nitrogen compounds from organic streams. 4,332,675, Cl. 208-254.00R.

Baset, Zeinab, to Exxon Research & Engineering Co. Removal of basic nitrogen compounds from organic streams. 4,332,676, Cl. 208-254.00R.

BASF Aktiengesellschaft: *See*—
Hoch, Helmut; Hahn, Erwin; and Hiller, Heinrich, 4,332,955, Cl. 549-56.000.
Schoettle, Klaus; Kaemmer, Eduard; Dobler, Peter; Gliniorz, Lothar; and Hoffmann, Werner, 4,333,116, Cl. 360-78.000.

BASF Wyandotte Corporation: *See*—
Christman, Donald L.; and Kan, Peter T., 4,332,953, Cl. 548-307.000.
deMonterey, Francis G.; Adhia, Bharat J.; and Johnson, David M., 4,332,354, Cl. 241-16.000.

Battelle Development Corporation: *See*—
Bellmann, Gunter; and Van Tao, Nguyen, 4,332,964, Cl. 560-141.000.

Battelle Memorial Institute: *See*—
Genequand, Pierre; and Gross, Daniel M., 4,332,775, Cl. 422-112.000.

Bauer, Otto; Eberl, Leonhard; Geyer, Gerhard; and Straubel, Max, to Robert Bosch GmbH. Injection timing device for internal combustion engines. 4,332,227, Cl. 123-502.000.

Baughn, Richard L.: *See*—
Kohn, Gustave K.; and Baughn, Richard L., 4,332,792, Cl. 424-84.000.

Bauman, Richard F.; and Ryan, Daniel F., to Exxon Research & Engineering Co. Coal liquefaction process wherein jet fuel, diesel fuel and/or ASTM No. 2 fuel oil is recovered. 4,332,666, Cl. 208-8.0LE.

Bauman, Verne W.: *See*—
Kira, Hiroshi; and Bauman, Verne W., 4,333,071, Cl. 340-56.000.

Baumann, Richard S., to Western Industries, Inc. Gas torch having an improved valve construction. 4,332,550, Cl. 431-344.000.

Baxter Travenol Laboratories, Inc.: *See*—
Bilstad, Arnold C.; and Brown, Richard I., 4,333,016, Cl. 250-577.000.
Cabelli, Michael D.; and Groman, Ernest V., 4,332,786, Cl. 424-1.000.
Mittleman, Herbert; and Boland, Gordon P., 4,332,247, Cl. 128-214.00C.
Williams, Ronald A., 4,332,122, Cl. 53-425.000.

Bayer Aktiengesellschaft: *See*—
Harms, Wolfgang; Wunderlich, Klaus; and von Oertzen, Klaus, 4,332,938, Cl. 544-189.000.
Heins, Ferdinand; and Speicher, Wolfgang, 4,332,860, Cl. 428-473.000.
Kressner, Michael; Kolbe, Joachim; Bremer, Fritz; Pape, Georg; Wolf, Karlheinz; and Kummeler, Ferdinand, 4,332,587, Cl. 8-506.000.
Maurer, Fritz; Riebel, Hans-Jochem; and Priesnitz, Uwe, 4,332,745, Cl. 260-464.000.
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,332,765, Cl. 264-206.000.
Schmidt, Manfred; Wank, Joachim; and Reese, Eckart, 4,332,921, Cl. 525-462.000.

Baylor, John M., to J. I. Case Company. Master track link assembly. 4,332,425, Cl. 305-54.000.

BBC Brown, Boveri & Company, Limited: *See*—
Jester, Alfred; Mueller, Elmar; and Holick, Hubert, 4,333,102, Cl. 357-81.000.

Beach Manufacturing Corp.: *See*—
Dulin, David L., 4,332,197, Cl. 101-415.100.

Bean, William C.; and Tao, Thomas M., to American Can Company. Method for the manufacture of fibrous webs. 4,332,756, Cl. 264-70.000.

Beauvais, Max P.; and Camezon, Raymond E. Method for canning food products. 4,332,826, Cl. 426-407.000.

Beavan, Stuart W., to Lever Brothers Company. Bleaching liquid cleaning composition. 4,332,691, Cl. 252-96.000.

Bebb, Herbert B.: *See*—
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., 4,332,464, Cl. 355-14.00C.

Beck, Heinz: *See*—
Wegerhoff, Arno; Zengel, Hans; Brodowski, Walter; Beck, Heinz; Seeberger, Ernst; Steenken, Gerhard; and Hillermeider, Karlheinz, 4,332,600, Cl. 65-2.000.
Wegerhoff, Arno; Zengel, Hans; Brodowski, Walter; Beck, Heinz; Seeberger, Ernst; Steenken, Gerhard; and Hillermeider, Karlheinz, 4,332,601, Cl. 65-2.000.

Becker, Dieter: *See*—
Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., 4,332,791, Cl. 424-52.000.

Becker, Erich. Membrane pump with tiltable rolling piston pressing the membrane. 4,332,534, Cl. 418-45.000.

Becker, Frank C.: *See*—
Williams, John W.; and Becker, Frank C., 4,332,821, Cl. 424-322.000.

Beecham Group Limited: *See*—
Newsome, Peter M.; and Mullen, Noel A., 4,332,814, Cl. 424-273.00R.

Behney, Charles A. Equine sanitation apparatus and method. 4,332,250, Cl. 128-239.000.

Behnke, Joachim: *See*—
Gerlach, Klaus; Behnke, Joachim; Rosener, Wolfgang; and Hohm, Ewald, 4,332,686, Cl. 210-651.000.

Behringwerke Aktiengesellschaft: *See*—
Pernice, Walter; and Sedlacek, Hans-Harald, 4,332,783, Cl. 424-1.000.

Beigel, Michael, to International Identification Incorporated. Identification device. 4,333,072, Cl. 340-825.540.

Belanger, Patrice C.; and Young, Robert N., to Merck & Co., Inc. N-Substituted-benzyl-11-endo-amino-5,6,7,8,9,10-hexahydro-2-hydroxy (or methoxy)-6,9-methanobenzocyclooctene (or nonene) centrally-acting analgesics. 4,332,807, Cl. 424-274.000.

Belanger, Patrice C.; and Young, Robert N., to Merck & Co., Inc. N-(Substituted)-2,5-ethano-8-hydroxy (or methoxy)-1,2,3,4,5,6-hex-

ahydro-3 (or 4)-benzazocine centrally-acting analgesics. 4,332,810, Cl. 424-267.000.

Bell, Dwain C.; and Anderson, Lloyd E. Carpet removing apparatus and method. 4,332,371, Cl. 254-203.000.

Bell Telephone Laboratories: *See*—
Balde, John W.; Spencer, Robert A.; and Thompson, Richard K., Jr., 4,332,433, Cl. 339-99.00R.

Bell Telephone Laboratories, Incorporated: *See*—
Aspnes, David E.; and Bagley, Brian G., 4,332,833, Cl. 427-8.000.
Buric, Milorad R.; and Maxemchuk, Nicholas F., 4,333,097, Cl. 340-711.000.
Davis, Paul C.; Jackson, Raymond G.; Sodomsky, Kenneth F.; and Whitson, Dennis L., 4,332,984, Cl. 179-81.00R.
DiDomenico, Mauro, Jr.; Singh, Shobha; and Van Uitert, LeGrand G., 4,332,440, Cl. 350-357.000.
Kurshan, Robert P.; and Malah, David, 4,333,156, Cl. 364-724.000.
Levinstein, Hyman J.; Murarka, Shyam P.; and Sinha, Ashok K., 4,332,839, Cl. 427-85.000.
Miller, Anton J., 4,332,474, Cl. 356-366.000.
Minetti, Richard H., 4,332,341, Cl. 228-180.00A.
Schwarz, Alfred O., 4,333,121, Cl. 361-104.000.
Shankoff, Theodore A., 4,332,881, Cl. 430-311.000.

Bell, Theodore F. Bicycle brake. 4,332,313, Cl. 192-5.000.

Bellmann, Gunter; and Van Tao, Nguyen, to Battelle Development Corporation. Unsaturated esters of adamantane containing diols and thermo-resistant cross-linked polymers therefrom. 4,332,964, Cl. 560-141.000.

Belval, Michel; Casselman, Chantal; Malet, Jean-Claude; Prats, Christian; and Meneret, Jean, to Commissariat a l'Energie Atomique; and Carbonisation Entreprise et Ceramique (C.E.C.). Sub-assembly for detecting leaks of a liquid metal. 4,332,170, Cl. 73-40.50R.

Bemis, Richard A.; Hutchins, Clinton E.; Markland, Edward J.; and Arora, Mulk R., to Sprague Electric Company. AC Etching of aluminum capacitor foil. 4,332,651, Cl. 204-129.900.

Bendix Corporation, The: *See*—
Caruso, Peter J., 4,333,073, Cl. 340-825.360.
Whiteside, Arliss E., 4,333,075, Cl. 340-347.0AD.
Whiteside, Arliss E.; Freedman, Morris D.; and Tasar, Omur, 4,333,144, Cl. 364-200.000.

Benitez, Francisco M.; and English, Michael F., to Exxon Research & Engineering Co. Esterification of neo acids by the use of cation exchange resins. 4,332,738, Cl. 260-410.600.

Benner, James D.: *See*—
Loyd, Comer C., Jr.; and Benner, James D., 4,332,389, Cl. 273-237.000.

Bensussan, Andre; and Azam, Guy, to C. G. R. MeV. Microwave drying device for drying products in form of grains. 4,332,091, Cl. 34-1.000.

Bentley, Terence J.; Gastrock, William H.; and Asato, Goro, to American Cyanamid Co. Process for preparing 4,5,6,7-tetrahydro-7-oxobenzo[b]thiophenes and 1,2,3,4-tetrahydro-4-oxonaphthalenes. 4,332,724, Cl. 260-326.00S.

Benton Casing Service, Inc.: *See*—
Ellzey, Rex B., 4,332,411, Cl. 294-104.000.

Bereit, Arnold. Apparatus for the atomization of oil in a compressed air line. 4,332,309, Cl. 184-7.00D.

Berejka, Anthony J., to Raychem Corporation. Adhesive compositions comprising ethylene/polar monomer copolymer and an elastomer. 4,332,655, Cl. 204-159.200.

Berglind, Eilert: *See*—
rlenoch, Bengt; and Berglind, Eilert, 4,333,078, Cl. 343-6.5LC.

Berglund, Erling G., to Clinicon AB. Arrangement for supplying metered quantities of reagent liquid to the test tubes of an analyzing apparatus. 4,332,768, Cl. 422-63.000.

Berk, Edmund C., to United States of America, Navy. Flexure mounted gimbal support assembly. 4,332,365, Cl. 248-544.000.

Berneke, Erik S., to V. Kann Rasmussen Holding A/S. Dehumidifying device. 4,332,663, Cl. 204-277.000.

Bernini, Giuseppe, to Secrifarma S.p.A. Process for preparing micronized spironolactone. 4,332,721, Cl. 260-239.570.

Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., to MPD Technology Corporation. Catalyst sheet and preparation. 4,332,698, Cl. 252-430.000.

Berruti, Pierangelo: *See*—
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,332,487, Cl. 400-126.000.

Bert, Stephen F.: *See*—
Rieth, Kurt A.; and Bert, Stephen F., 4,332,061, Cl. 24-343.000.

Bertea Corporation: *See*—
Stevens, Curtis E., 4,333,009, Cl. 250-237.00G.

Berthold, Rudiger; and Muller, Werner H., to Hoechst Aktiengesellschaft. Cyclohexanones and cyclohexenones. 4,332,941, Cl. 546-191.000.

Berthollet, Pierre. Apparatus for uprooting shrubs and the like. 4,332,093, Cl. 37-2.00R.

Berti, Eugenio, to Burroughs Corporation. Tensioning means for reel-to-reel tape transports. 4,332,359, Cl. 242-203.000.

Berzsenyi, Pal: *See*—
Kuszmann, Janos; Medgyes, Gabor; Andrasy, Ferenc; and Berzsenyi, Pal, 4,332,818, Cl. 424-285.000.

Beschke, Helmut; Friedrich, Heinz; and Offermanns, Heribert, to Deutsche Gold -und Silber-Scheideanstalt Vormals Roessler. Process for the production of 2,3-cycloalkenopyridines. 4,332,940, Cl. 546-181.000.

Beskin, Gerald S., to Therapac Div., Krelitz Industries, Inc. Easel. 4,332,364, Cl. 248-442.200.

Best, Robert M. TV Movies that talk back. 4,333,152, Cl. 364-521.000.

Beth, Albert H.: *See*—
Venkataramu, Sindhaghatta D.; Pearson, Donald E.; and Beth, Albert H., 4,332,946, Cl. 546-208.000.

Beyerle, Rudi: *See*—
Schonafinger, Karl; Beyerle, Rudi; Nitz, Rolf-Eberhard; Martorana, Piero A.; and Fiedler, Volker, 4,332,801, Cl. 424-246.000.

Biasotti, Joseph B.: *See*—
Herbstman, Sheldon; Biasotti, Joseph B.; and Brennan, Michael E., 4,332,595, Cl. 44-72.000.

Bicher, James I.; Sandhu, Taljit S.; and Hetzel, Fred W. External microwave applicator and method. 4,332,260, Cl. 128-804.000.

Bicker, Richard; and Erckel, Rudiger, to Hoechst Aktiengesellschaft. Process for the preparation of pyridine. 4,332,943, Cl. 546-253.000.

Bigall, Klaus D.; and Roesler, Helmut, to Siemens Aktiengesellschaft. Combination shift register, counter and memory device. 4,333,159, Cl. 364-900.000.

Biller, Leonhard F.: *See*—
Hensel, Roy; Biller, Leonhard F.; and Danson, Russell J., 4,332,454, Cl. 354-317.000.

Bilstad, Arnold C.; and Brown, Richard I., to Baxter Travenol Laboratories, Inc. Liquid presence detector. 4,333,016, Cl. 250-577.000.

Binz, Lee V., to Barber-Greene Company. Method and apparatus for reducing smoke emissions in an asphalt drum mixer. 4,332,478, Cl. 366-4.000.

Bischofberger, Juerg; and Wuermli, Arthur, to Rieter Machine Works Limited. Drive for drafting arrangement rolls of long spinning machines. 4,332,059, Cl. 19-244.000.

Bishop, Kenneth W., to Plessey Overseas Limited. Thyristor control circuits. 4,333,048, Cl. 323-319.000.

BJ-Hughes Inc.: *See*—
Gandy, Richard G.; and Briggs, Garry L., 4,332,619, Cl. 106-87.000.
Kuus, Felix; and Eckmann, Gerald C., 4,332,298, Cl. 166-319.000.

Bjerklie, John W.: *See*—
LaHaye, Paul G.; Bjerklie, John W.; and Penty, Robert A., 4,332,295, Cl. 165-178.000.

Blackmon, Lawrence E.; Dees, John R.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-Peir, to Fiber Industries, Inc. Process for continuous filament yarn with wool-like hand. 4,332,757, Cl. 264-103.000.

Blackmon, Lawrence E.; Dees, John R.; and Mowe, Wayne T., to Fiber Industries, Inc. Method for producing polyester wool-like yarn. 4,332,758, Cl. 264-103.000.

Blanken, Thomas C.: *See*—
Lijzenga, Jan; Van Gooswilligen, Gerrit; and Blanken, Thomas C., 4,332,703, Cl. 524-68.000.

Blanton, William A., Jr.; and Flanders, Robert L., to Chevron Research Company. Process for controlling sulfur oxides using an alumina-impregnated catalyst. 4,332,672, Cl. 208-120.000.

Blaskowski, Henry J.; and Palchik, David, to Combustion Engineering, Inc. Method of improving load response on coal-fired boilers. 4,332,207, Cl. 110-347.000.

Bleckmann, Ingo. Method of producing a heater or heat exchange element. 4,332,080, Cl. 29-611.000.

Blendax-Werke R. Schneider GmbH & Co.: *See*—
Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., 4,332,791, Cl. 424-52.000.

Blitchington, Frank H., to Western Electric Co., Inc. Methods of and system for aligning a device with a reference target. 4,333,044, Cl. 318-636.000.

Blount, David H. Process for the production of alkali metal silicate-organic plastics. 4,332,712, Cl. 524-650.000.

Blount, David H. Process for the production of alkali metal silicate-organic plastics. 4,332,926, Cl. 524-650.000.

Blumberg, Josef: *See*—
Schipper, Heinz; Hartig, Wolfgang; Weber, Klaus; Blumberg, Josef; and Wessolowski, Bernd, 4,332,129, Cl. 57-105.000.

BMS Roasting Equipment Corporation: *See*—
Stachowicz, Edward, 4,332,409, Cl. 294-2.000.

Bobb, Clifford F.; and Cobaugh, Robert F., to AMP Incorporated. Preassembled electrical connector. 4,332,431, Cl. 339-74.00R.

Bobst, S.A.: *See*—
Jaton, Jean-Philippe, 4,332,124, Cl. 53-540.000.

Bochan, John, to General Electric Company. Washing machine. 4,332,152, Cl. 68-171.000.

Bochumer Eisenhuette Heintzmann GmbH & Co.: *See*—
Heintzmann, Peter; Koppers, Manfred; and Bohnes, Karlheinz, 4,332,512, Cl. 405-290.000.

Bock, Gustavus P.; and Miller, Larry R., to General Motors Corporation. Stepping motor. 4,333,026, Cl. 310-42.000.

Bock, Peter, to Rosenthal Technik AG. Flux combination of barium oxide and potassium feldspar for high-strength alumina porcelain electric insulators. 4,332,913, Cl. 501-144.000.

Bodine Electric Company: *See*—
Oltendorf, Norman E., 4,333,045, Cl. 318-696.000.

Boehringer Ingelheim KG: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,332,802, Cl. 424-251.000.

Boehringer, Wilfred E., to McDonnell Douglas Corporation. Dual sealing ring seal with hydraulic expansion. 4,332,392, Cl. 277-27.000.

Boeing Company, The: *See*—
Kristoffersen, Bjorn R., 4,332,041, Cl. 4-316.000.

Tucker, Gordon H.; and Fitch, Robert E., 4,332,206, Cl. 110-203.000.
Boer, Werner: *See*—
Bahre, Karl; Boer, Werner; Richter, Jorg; Seebacher, Gerald; and Warnke, Hans, 4,332,317, Cl. 198-734.000.
Boerner, Manfred: *See*—
Brossmer, Max; and Boerner, Manfred, 4,332,151, Cl. 68-5.00E.
Bohnes, Karlheinz: *See*—
Heintzmann, Peter; Koppers, Manfred; and Bohnes, Karlheinz, 4,332,512, Cl. 405-290.000.
Boland, Gordon P.: *See*—
Mittleman, Herbert; and Boland, Gordon P., 4,332,247, Cl. 128-214.00C.
Boldebuck, Edith M.; and Banucci, Eugene G., to General Electric Company. Polycarboxylic acid/ester-diamine aqueous coating composition. 4,332,708, Cl. 524-376.000.
Bolen, Charles E.: *See*—
Marzocchi, Alfred; Roberts, Michael G.; Bolen, Charles E.; and Harrington, Edward R., 4,332,704, Cl. 523-203.000.
Boltze, Karl-Heinz; Raddatz, Siegfried; and Seidel, Peter-Rudolf, to Troponwerke GmbH & Co. KG. Preparation of 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-3-indolylacetoxyacetic acid. 4,332,727, Cl. 548-501.000.
Bonner, Edgar L.: *See*—
Faerber, Nelson A.; and Bonner, Edgar L., 4,333,110, Cl. 358-165.000.
Boone, Frank J., Sr. Emergency trachea airway. 4,332,245, Cl. 128-207.170.
Boros, Lawrence A., to Rockwell International Corporation. Apparatus for welding automotive brake shoes. 4,332,998, Cl. 219-107.000.
Bottrell, Gerald W., to Ventus Energy Corp. Wind energy conversion system with reaction torque for power control. 4,333,018, Cl. 290-55.000.
Bourdiau, Georges: *See*—
Anatol, Jesus; Clenet, Yves; and Bourdiau, Georges, 4,332,959, Cl. 560-60.000.
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, to Ing. C. Olivetti & C., S.p.A. Solid ink cartridge for a non-impact printer. 4,332,487, Cl. 400-126.000.
Bowen Tools, Inc.: *See*—
Byrne, Joseph H., Jr., 4,332,062, Cl. 24-263.0DA.
Boyce, Harold L. Leakproof refrigerant connector. 4,332,273, Cl. 137-322.000.
Boyd, Bobby G.: *See*—
Barton, Joseph J., IV; and Boyd, Bobby G., 4,332,106, Cl. 47-1.500.
Boyer, Lyndon D., to Conoco Inc. Processing of heavy high-sulfur crude oil. 4,332,671, Cl. 208-92.000.
Boyle, Daniel J.: *See*—
Jaeschke, Harold R.; Linder, Alan; and Boyle, Daniel J., 4,332,322, Cl. 206-364.000.
BP Chemicals Limited: *See*—
Gasser, Clive G.; and Russell, John, 4,332,743, Cl. 562-512.200.
Bradford, William C.: *See*—
Dick, John O.; McKenzie, Joe A.; and Bradford, William C., 4,333,079, Cl. 343-7.0PF.
Bradley, Dennis K.; Brewbaker, Harold R.; and West, Vern W. Cable burying apparatus. 4,332,511, Cl. 405-178.000.
Bradshaw, Stephen L.: *See*—
King, John F.; and Bradshaw, Stephen L., 4,332,864, Cl. 429-3.000.
Braet, Jerome A.: *See*—
Van Auwelaer, James M.; Hutchinson, Eugene B.; and Braet, Jerome A., 4,332,126, Cl. 56-10.200.
Branch, John K. Bow pencil. 4,332,496, Cl. 401-52.000.
Brandenfels, Carl W.: *See*—
Foley, Clifford T.; and Brandenfels, Carl W., 4,332,046, Cl. 7-146.000.
Brassell, Gilbert W.; Lewis, John, Jr.; and Weber, Gary W., to United States of America, Energy. Method for fabricating thin films of pyrolytic carbon. 4,332,751, Cl. 264-28.000.
Braun, Rolf, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Pressurized arrangement including timers for metering ink on the fountain roller of a printing press. 4,332,196, Cl. 101-365.000.
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Kurland, Heinrich; Schaper, Helmut; and Schueller, Joachim, 4,332,621, Cl. 127-19.000.
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Brennan, Michael E.: *See*—
Herbstman, Sheldon; Biasotti, Joseph B.; and Brennan, Michael E., 4,332,595, Cl. 44-72.000.
Breuer, Oswald: *See*—
Merten, Gerhard; Breuer, Oswald; and Steinkuhl, Bernd, 4,332,421, Cl. 299-34.000.
Brevetti Motta s.a.s: *See*—
Isella, Giuseppe, 4,332,072, Cl. 29-408.000.
Brewbaker, Harold R.: *See*—
Bradley, Dennis K.; Brewbaker, Harold R.; and West, Vern W., 4,332,511, Cl. 405-178.000.
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Fukahori, Yoshihide; Katacka, Nobuyuki; and Anzai, Shiro, 4,332,918, Cl. 525-259.000.
Takigawa, Hiroyoshi; and Miyamura, Nobuhiro, 4,332,286, Cl. 152-209.00R.
Briggs, Garry L.: *See*—
Gandy, Richard G.; and Briggs, Garry L., 4,332,619, Cl. 106-87.000.
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Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,332,951, Cl. 548-218.000.
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Pollard, Maurice G.; and Sutton, Allan, 4,332,201, Cl. 105-167.000.
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Armstrong, David A., 4,332,357, Cl. 242-78.100.
Brodowski, Walter: *See*—
Wegerhoff, Arno; Zengel, Hans; Brodowski, Walter; Beck, Heinz; Seeberger, Ernst; Steenken, Gerhard; and Hillermeider, Karlheinz, 4,332,600, Cl. 65-2.000.
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McGuire, Kenyon E.; and Brokl, Stanley S., 4,333,107, Cl. 358-120.000.
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Brossmer, Max; and Boerner, Manfred, to D.I.E.N.E.S Apparatebau GmbH. Apparatus for heat treatment of synthetic yarns and fibers. 4,332,151, Cl. 68-5.00E.
Brown, Michael J., to GAF Corporation. Plant growth promoting composition. 4,332,612, Cl. 71-95.000.
Brown, Richard I.: *See*—
Bilstad, Arnold C.; and Brown, Richard I., 4,333,016, Cl. 250-577.000.
Brown, Wade R., to Eaton Corporation. Precision flow control device. 4,332,275, Cl. 137-504.000.
Brownlee, Robert R.; Tyers, G. Frank; and Neff, Paul H., to Research Corporation. System for monitoring hermetic integrity, pacing pulse and load impedance in cardiac pacers. 4,332,256, Cl. 128-419.0PT.
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Bruchert, Werner: *See*—
Hempel, Matthias; and Bruchert, Werner, 4,332,763, Cl. 264-176.00R.
Brunson, Roy J., to Exxon Research & Engineering Co. Pretreatment of solid carbonaceous material with dicarboxylic aromatic acids to prevent scale formation. 4,332,668, Cl. 208-8.0LE.
Brunson, Roy J.: *See*—
Epperly, William R.; Deane, Barry C.; and Brunson, Roy J., 4,332,667, Cl. 208-8.0LE.
Brunswick Corporation: *See*—
Neufeld, Henry L., 4,332,358, Cl. 242-84.20A.
Buchanan, Howard A. Prefabricated building structure. 4,332,116, Cl. 52-82.000.
Buckley, Keith; Burrows, Ian E.; and Lowe, Philip J., to Mars Limited. Animal food and method. 4,332,832, Cl. 426-641.000.
Budecker, Ludwig, to ITT Industries, Inc. Flow control and accumulator charging valve. 4,332,270, Cl. 137-101.000.
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., to Nassau Recycle Corporation. Process for reclaiming composite materials. 4,332,677, Cl. 209-3.000.
Buemi, Dennis P., to Liggett Group Inc. Fabricated meat and meat by-products and process. 4,332,823, Cl. 426-272.000.
Buhler, Marcel: *See*—
Sozzi, Tomaso; Schrenk, Alfred; and Buhler, Marcel, 4,332,790, Cl. 424-38.000.
Bunker Ramo Corporation: *See*—
Ayer, George E., 4,332,257, Cl. 128-640.000.
Burbank, Peter L., to University of Kentucky Research Foundation. Instructional device for use of a bronchoscope. 4,332,569, Cl. 434-272.000.
Burgers, August, to Europatent S.A. Wooden frames or the like having two frame parts adapted to be connected by a clamping-eccentric connector. 4,332,495, Cl. 403-6.000.
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., to Gulf & Western Industries, Inc. Process for beneficiating coal. 4,332,593, Cl. 44-51.000.
Burgkhardt, Bertram; Konig, Winfried; Piesch, Ernst; and Rober, Hans G., to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung. Evaluation instrument for phosphate glass dosimeter. 4,333,013, Cl. 250-461.00R.
Buric, Milorad R.; and Maxemchuk, Nicholas F., to Bell Telephone Laboratories, Incorporated. Visual display terminal without finger repositioning. 4,333,097, Cl. 340-711.000.
Burl, Michael: *See*—
Harrison, Colin G.; and Burl, Michael, 4,333,053, Cl. 324-307.000.
Burlington Industries, Inc.: *See*—
Koncelik, Joseph A., 4,332,042, Cl. 5-424.000.
Burroughs Corporation: *See*—
Berti, Eugenio, 4,332,359, Cl. 242-203.000.
Looschen, Floyd W., 4,333,176, Cl. 370-84.000.

Burrows, Ian E.: *See—*
Buckley, Keith; Burrows, Ian E.; and Lowe, Philip J., 4,332,832, Cl. 426-641.000.

Bury, Joe. Target with magnetically-held, dislodgeable indicator. 4,332,390, Cl. 273-389.000.

Busse, Jurgen: *See—*
Soecknick, Erhard; and Busse, Jurgen, 4,332,143, Cl. 62-284.000.

Butler, John L., to Image Acoustics, Inc. Speaker system employing passive radiator. 4,332,986, Cl. 179-146.00E.

Butterwick, Gilbert N., to RCA Corporation. Photomultiplier tube having directional alkali metal vapor evaporation means. 4,333,031, Cl. 313-95.000.

Byrne, Joseph H., Jr., to Bowen Tools, Inc. Bowl structure. 4,332,062, Cl. 24-263.0DA.

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Bensussan, Andre; and Azam, Guy, 4,332,091, Cl. 34-1.000.

C. J. Rush Limited: *See—*
Appelmann, Horst, 4,332,108, Cl. 49-44.000.

Cabelli, Michael D.; and Groman, Ernest V., to Baxter Travenol Laboratories, Inc. Method and composition for vitamin B-12 Assay. 4,332,786, Cl. 424-1.000.

Cachier, Gerard, to Thomson-CSF. Ultra-high frequency simultaneous transmission and reception head, millimeter wave transmitter - receiver and radar using such a head. 4,333,076, Cl. 343-5.0DD.

Caffrey, Michael S. Superior performance yo-yo. 4,332,102, Cl. 46-61.000.

Cail, Norman; Daniels, Raymond A.; Eggerling, John B.; and Lammers, Gerald B., to International Business Machines Corporation. Electrical drive for scanning optics in a continuously variable reduction copier. 4,332,461, Cl. 355-14.00R.

Calder, Powell L., to Texas Instruments. Input process sequence controller. 4,333,143, Cl. 364-200.000.

Calvert, Rodney K., to Mead Corporation, The. Packaging machine and method. 4,332,123, Cl. 53-475.000.

Camezon, Raymond E.: *See—*
Beauvais, Max P.; and Camezon, Raymond E., 4,332,826, Cl. 426-407.000.

Campbell, Robert W.: *See—*
Nimer, Edward L.; and Campbell, Robert W., 4,332,911, Cl. 501-140.000.

Campbell, Sterret P. Dough divider. 4,332,538, Cl. 425-140.000.

Candelaria, Ken: *See—*
Mazeski, Conrad A.; and Candelaria, Ken, 4,332,566, Cl. 434-178.000.

Cane, Domenick; and Peterson, Ray D., to Westinghouse Electric Corp. Paired stage flash evaporator having improved distillate collection. 4,332,642, Cl. 202-173.000.

Cannella, Vincent D.: *See—*
Izu, Masatsugu; and Cannella, Vincent D., 4,332,880, Cl. 430-272.000.

Canon Kabushiki Kaisha: *See—*
Matsumoto, Kazuya, 4,333,112, Cl. 358-298.000.
Mochizuki, Noritaka; and Kubota, Atsushi, 4,333,130, Cl. 362-293.000.
Ohara, Katsunobu; Tanaka, Keiji; Ando, Yujiro; and Moriyama, Inao, 4,332,876, Cl. 430-68.000.
Okuno, Youichi, 4,332,446, Cl. 354-155.000.
Sato, Masatoshi, 4,332,477, Cl. 356-371.000.
Tamura, Yasuyuki; Nakahata, Kimio; and Ishida, Masato, 4,333,124, Cl. 361-214.000.
Uehara, Haruo; and Satomi, Kunio, 4,332,706, Cl. 523-450.000.
Yagasaki, Toshiaki; Masuda, Shunichi; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,332,462, Cl. 355-14.00R.

Carbonisation Entreprise et Ceramique (C.E.C.): *See—*
Belval, Michel; Casselman, Chantal; Malet, Jean-Claude; Prats, Christian; and Meneret, Jean, 4,332,170, Cl. 73-40.50R.

Cardell, Max L.: *See—*
Brayford, John R.; and Cardell, Max L., 4,332,764, Cl. 264-176.00F.

Cardin, Pierre J. Muscle building apparatus for developing bending strength. 4,332,380, Cl. 272-137.000.

Cargile, Harry M., to Emhart Industries, Inc. Core pin support and adjusting arrangement. 4,332,545, Cl. 425-577.000.

Carlew Chemicals Limited: *See—*
Crocker, Zenas; and Gupta, Ved P., 4,332,479, Cl. 366-77.000.

Carlson, Paul R.; and Carlson, Richard L. Remotely manually controllable belt drive clutch. 4,332,572, Cl. 474-38.000.

Carlson, Richard L.: *See—*
Carlson, Paul R.; and Carlson, Richard L., 4,332,572, Cl. 474-38.000.

Carlson, Roland W.: *See—*
Heuscher, Dominic J.; and Carlson, Roland W., 4,333,145, Cl. 364-414.000.

Carrier Corporation: *See—*
Hayes, Richmond S., Jr., 4,332,137, Cl. 62-81.000.
Nakahama, Syuhei; and Yamashita, Etsu, 4,333,001, Cl. 219-125.100.

Caruso, Peter J., to Bendix Corporation, The. Electromechanical decoder. 4,333,073, Cl. 340-825.360.

CasChem, Inc.: *See—*
Simone, Dominic, 4,332,927, Cl. 528-58.000.

Casey, James O., Jr.: *See—*
Phillips, Bobby M.; Casey, James O., Jr.; and Gregory, Dale R., 4,332,761, Cl. 264-147.000.

Casio Computer, Co., Ltd.: *See—*
Kashio, Toshio, 4,332,181, Cl. 84-1.010.

Cassella Aktiengesellschaft: *See—*
Schonafinger, Karl; Beyerle, Rudi; Nitz, Rolf-Eberhard; Martorana, Piero A.; and Fiedler, Volker, 4,332,801, Cl. 424-246.000.

Casselman, Chantal: *See—*
Belval, Michel; Casselman, Chantal; Malet, Jean-Claude; Prats, Christian; and Meneret, Jean, 4,332,170, Cl. 73-40.50R.

Castaneda, Henry B.: *See—*
Rampy, Gordon A.; and Castaneda, Henry B., 4,332,769, Cl. 422-75.000.

Catt, Ivor. Data processing apparatus operative on data passing along a serial, segmented store. 4,333,161, Cl. 364-900.000.

Cave, Ellis K., to Banc-By-Phone Corporation. Automatic gain control circuit with non-negative exponential release. 4,333,056, Cl. 330-129.000.

Celanese Corporation: *See—*
Barer, Sol J., 4,332,817, Cl. 424-285.000.
Dalton, Charles A.; and Slinkard, William E., 4,332,971, Cl. 568-480.000.
Ide, Yoshiaki, 4,332,759, Cl. 264-108.000.

Centini, Felice: *See—*
Olivieri, Roberto; Eletti Bianchi, Giancarlo; Fascetti, Eugenio; Centini, Felice; Degen, Ludwig; and Marconi, Walter, 4,332,905, Cl. 435-280.000.

Centre de Recherches Metallurgie-Centrum voor Research in de Metallurgie: *See—*
Economopoulos, Marios; and Lambert, Nicole, 4,332,630, Cl. 148-12.00B.

Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement: *See—*
Estenevy, Serge, 4,332,098, Cl. 42-84.000.

Ceskoslovenska akademie ved: *See—*
Kalal, Jaroslav; and Tlustakova, Marie, 4,332,694, Cl. 252-189.000.

Cetenko, Wiaczeslaw A.: *See—*
Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., 4,332,947, Cl. 546-284.000.

Champiain Cable Corporation: *See—*
Hawkins, Richard E., 4,332,976, Cl. 174-107.000.

Champion International Corporation: *See—*
Fremont, Henry A., 4,332,748, Cl. 264-11.000.
Jaeschke, Harold R.; Linder, Alan; and Boyle, Daniel J., 4,332,322, Cl. 206-364.000.

Chamran, Morteza M.; Scott, Larkin B.; Williams, Paul B.; and Ford, Michael A., to Perkin-Elmer Corporation, The. Spectrophotometer system having power line synchronization. 4,332,470, Cl. 356-325.000.

Chang, Wen-Hsuan: *See—*
Scriven, Roger L.; and Chang, Wen-Hsuan, 4,332,329, Cl. 220-2.10A.

Chapman, Gary L.; and Cummins, William H., to Texaco Inc. Catalyst bed level measuring device. 4,332,086, Cl. 33-126.500.

Charkey, Allen, to Energy Research Corporation. Zinc electrode with cement additive. 4,332,871, Cl. 429-217.000.

Chase, Edward J., Jr.: *See—*
Stora, Richard A.; and Chase, Edward J., Jr., 4,332,236, Cl. 126-121.000.

Chemetrics, Inc.: *See—*
Rampy, Gordon A.; and Castaneda, Henry B., 4,332,769, Cl. 422-75.000.

Chemical Research & Licensing Company: *See—*
Smith, Lawrence A., Jr., 4,332,968, Cl. 564-278.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Muller, Wolfgang H. E.; and Zolffel, Michael, 4,332,645, Cl. 203-75.000.

Chen, Li-Fu: *See—*
Gong, Cheng-Shung; Chen, Li-Fu; and Tsao, George T., 4,332,903, Cl. 435-254.000.

Chen, Shin H. Metronome cartridge. 4,333,172, Cl. 369-2.000.

Cheney, Marvin C., Jr., to United Technologies Corporation. Matched stiffness rotor flexbeam and blade system. 4,332,525, Cl. 416-134.00A.

Chertock, Alan J., deceased (by Hlavac, Theodore E., Jr., beneficiary); Fox, Jack N.; and Weissinger, Robert B., to United States of America, Energy. Vibrating fuel grapple. 4,332,640, Cl. 376-264.000.

Chesley, Gilman D. Self-configurable computer and memory system. 4,333,142, Cl. 364-200.000.

Chevron Research: *See—*
Albom, Bradley S., 4,332,912, Cl. 501-140.000.
Nimer, Edward L.; and Campbell, Robert W., 4,332,911, Cl. 501-140.000.

Chevron Research Company: *See—*
Blanton, William A., Jr.; and Flanders, Robert L., 4,332,672, Cl. 208-120.000.
Chin, Thomas G.; and Alston, Arthur, 4,332,159, Cl. 73-64.200.
Fraas, Lewis M., 4,332,974, Cl. 136-249.000.
Spars, Byron G.; Tamm, Paul W.; and Wallman, P. H., 4,332,669, Cl. 208-11.00R.

Chikama, Toshio, to Machida Endoscope Co., Ltd. Guide tube assembly. 4,332,242, Cl. 128-3.000.

Chikamasa, Hiroshi: *See—*
Tanaka, Yasunori; Noda, Shinji; and Chikamasa, Hiroshi, 4,332,840, Cl. 427-130.000.

Chin, Arthur H. T.: *See—*
Adkins, David E.; Chin, Arthur H. T.; Haws, Ronnie E.; and Wittman, Robert H., 4,332,277, Cl. 138-89.000.

Chin, Thomas G.; and Alston, Arthur, to Chevron Research Company. Reid vapor pressure tester. 4,332,159, Cl. 73-64.200.

Chinn, Eldon K.: *See—*
Parks, Alvin L.; and McAlexander, W. D., 4,332,299, Cl. 172-98.000.

Chloride Group Limited: *See—*
Gurwicz, David, 4,333,134, Cl. 363-17.000.
McWhinnie, John, 4,332,629, Cl. 148-11.50R.

Christiansen, James S. Wallet with elastic strap. 4,332,338, Cl. 224-222.000.

Christman, Donald L.; and Kan, Peter T., to BASF Wyandotte Corporation. Carbamylbiuret-modified polyisocyanates. 4,332,953, Cl. 548-307.000.

Christmann, Harold F.; and Miklas, Edward J., to Petro-Tex Chemical Corporation. Modified zinc ferrite oxidative dehydrogenation catalysts in oxidative dehydrogenation. 4,332,972, Cl. 585-442.000.

Chrysler Corporation: *See—*
Zimmerman, David M., 4,332,594, Cl. 44-53.000.

Ciba-Geigy AG: *See—*
Seifert, Gottfried; and Staubli, Sebastian, 4,332,939, Cl. 544-217.000.

Ciba-Geigy Corporation: *See—*
Auriemma, Joseph F., 4,332,403, Cl. 285-189.000.
Eugster, Peter; and Koller, Stefan, 4,332,588, Cl. 8-526.000.
Fah, Hansjakob; Farooq, Saleem; Grieder, Alfred; and Scheuzger, Karl, 4,332,811, Cl. 424-267.000.
Lehmann, Hans, 4,332,713, Cl. 156-328.000.
Nyfeler, Robert, 4,332,816, Cl. 424-274.000.
Reinehr, Dieter; and Hubele, Adolf, 4,332,969, Cl. 564-460.000.
Zink, Rudolf, 4,332,937, Cl. 544-105.000.

Ciciora, Walter S., to Zenith Radio Corporation. Intelligent teletext decoder. 4,333,109, Cl. 358-147.000.

Cise S.p.A.: *See—*
Adorni, Napoleone; and Pizzolati, Pier L., 4,332,436, Cl. 350-96.230.

Citizen Watch Co., Ltd.: *See—*
Nishikubo, Yasuhiko, 4,333,171, Cl. 368-87.000.

Ciuffini, Anthony J.: *See—*
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., 4,332,464, Cl. 355-14.00C.

Claire, Earl J.: *See—*
Reynolds, Christopher C.; Claire, Earl J.; and Ellis, John R., 4,332,980, Cl. 179-2.00A.

Clark, Paul R., to Rockwell International Corporation. Printed circuit board connector. 4,332,430, Cl. 339-17.00C.

Clark, Robin D., to Syntex (U.S.A.) Inc. 9-[2-(3-Indolyl)ethyl]-1oxa-4,9-diazaspiro[5.5]undecan-3-ones. 4,332,804, Cl. 424-248.570.

Clark, William D. K.: *See—*
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,332,698, Cl. 252-430.000.

Clayton, William J., to Mobil Oil Corporation. Plastic bag having unique tuck flap construction. 4,332,347, Cl. 229-62.000.

Clemmow, Raymond J.: *See—*
Wormald, Philip J.; and Clemmow, Raymond J., 4,332,502, Cl. 403-343.000.

Clenet, Yves: *See—*
Anatol, Jesus; Clenet, Yves; and Bourdiau, Georges, 4,332,959, Cl. 560-60.000.

Clinicon AB: *See—*
Berglund, Erling G., 4,332,768, Cl. 422-63.000.

Cloverline Inc., The: *See—*
Leopold, Norbert, 4,332,362, Cl. 248-226.500.

Cobaugh, Robert F.: *See—*
Bobb, Clifford F.; and Cobaugh, Robert F., 4,332,431, Cl. 339-74.00R.

Cobler, John A.: *See—*
Schulz, Johann G. D.; and Cobler, John A., 4,332,695, Cl. 252-312.000.

Cobra Golf, Inc. II: *See—*
Crow, Thomas L., 4,332,388, Cl. 273-172.000.

Cochran, Gary L.; and Parquet, Donald J., to J. I. Case Company. Hydrostatic transmission bleed-off valve. 4,332,134, Cl. 60-464.000.

Coffey, James P.: *See—*
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,332,698, Cl. 252-430.000.

Coflexip: *See—*
Reynard, Remi; Athe, Christian; and Aubert, Jean-Paul, 4,332,509, Cl. 405-168.000.

Cointment, Delma M. Device for removing and replacing soft contact lenses worn on the human eye. 4,332,408, Cl. 294-1.0CA.

Colleran, Stephen A., to Molex Incorporated. Low insertion force connector assembly. 4,332,432, Cl. 339-75.00M.

Collet, Marnix G.: *See—*
Peek, Hermanus L.; and Collet, Marnix G., 4,332,078, Cl. 29-580.000.

Collins, John D.; MacFall, Douglas S., Jr.; and Sciarretta, William A., to Raytheon Company. Signal processor. 4,333,080, Cl. 343-17.2PC.

Combustion Engineering, Inc.: *See—*
Blaskowski, Henry J.; and Palchik, David, 4,332,207, Cl. 110-347.000.

Commissariat a l'Energie Atomique: *See—*
Belval, Michel; Casselman, Chantal; Malet, Jean-Claude; Prats, Christian; and Meneret, Jean, 4,332,170, Cl. 73-40.50R.

Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme): *See—*
Maussion, Daniel, 4,333,024, Cl. 307-351.000.

Comstedt, Per A. P.; and Elfner, Bo A., to El-Fi Innovationer AB. Load indicators for alternating-current motors. 4,333,118, Cl. 361-30.000.

Connor, David T.: *See—*
Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., 4,332,947, Cl. 546-284.000.

Conoco Inc.: *See—*
Boyer, Lyndon D., 4,332,671, Cl. 208-92.000.
McConaghy, James R.; and Anderson, Ardis L., 4,332,641, Cl. 201-17.000.

Consan Pacific Incorporated: *See—*
Moulden, R. Edward, 4,333,123, Cl. 361-213.000.

Control Data Corporation: *See—*
Strom, Richard A., 4,333,039, Cl. 315-169.400.

Conwed Corporation: *See—*
Kelly, Michael G.; and Pastien, Eugene R., 4,332,326, Cl. 206-497.000.

Conyers, John A.; Oberth, Adolph E.; and Santerre, George M., to United States of America, Navy. Solid propellant composition. 4,332,632, Cl. 149-19.200.

Cook, R. Gordon; and Townsend, Todd V., to Lynch Communication Systems, Inc. Telephone system using pulse code modulated subscriber lines. 4,333,175, Cl. 370-56.000.

Cooney, Charles L.; and Schaefer, Eugene J., to Massachusetts Institute of Technology. Process for producing maltase. 4,332,899, Cl. 435-172.000.

Corben, Leo D., to Polaroid Corporation. Method for stabilizing and spectrally sensitizing photosensitive silver halide emulsion. 4,332,888, Cl. 430-570.000.

Cordingley, Lowell A.; and Gutschick, Lester C., to Zenith Radio Corporation. Anode contact spring and method thereof for color cathode ray picture tubes. 4,333,033, Cl. 313-407.000.

Corl, Robert W., Jr., to Modular Systems, Inc. Interlocking furniture assembly and method. 4,332,205, Cl. 108-60.000.

Coski, William D. Reciprocably supported dual drive member and features thereof. 4,332,420, Cl. 299-31.000.

Costanza, Daniel W., to Xerox Corporation. Optical scanning carriage. 4,332,460, Cl. 355-8.000.

Costet, Jean-Robert: *See—*
Devaud, Jacques; Costet, Jean-Robert; and Moulin, Michel, 4,333,154, Cl. 364-559.000.

Coulter Systems Corporation: *See—*
Kuehnle, Manfred R., 4,332,459, Cl. 355-3.0BE.

Coussement, Marc: *See—*
De Schepper, Achille; and Coussement, Marc, 4,332,684, Cl. 210-634.000.

Cowan, Robert W.: *See—*
Regueiro, William R.; Cowan, Robert W.; and Dick, Richard W., 4,333,147, Cl. 364-436.000.

Cowman, Joel V. Stud locater. 4,332,088, Cl. 33-169.00R.

Cox, Francis G.; and Ricketts, William J., to General Motors Corporation. Internal combustion engine with oxygen sensor heater control. 4,332,225, Cl. 123-440.000.

Crackel, John E., to TRW Inc. Digital phase-frequency detector. 4,333,055, Cl. 328-133.000.

Cresap, Richard L.; Taylor, Carson W.; and Kreipe, Michael J., to United States of America, Energy. Transient stability enhancement of electric power generating systems by 120-degree phase rotation. 4,333,021, Cl. 307-87.000.

Crocker, Zenas; and Gupta, Ved P., to Carlew Chemicals Limited. Apparatus for controlled mixing in a high intensity mixer. 4,332,479, Cl. 366-77.000.

Crooke, Peter A.; and Gallimore, Kenneth, to Rolls-Royce Limited. Porous refractory materials. 4,332,753, Cl. 264-44.000.

Crosby, Jeffrey N.: *See—*
Rhoda, Richard N.; and Crosby, Jeffrey N., 4,332,780, Cl. 423-413.000.

Crosgrove, Robert O.; Moody, Edward; and Sletten, Harold L., to Electric Power Research Institute, Inc. Failed element detection and location system and method for use in a nuclear reactor. 4,332,639, Cl. 376-253.000.

Crouzet: *See—*
Devaud, Jacques; Costet, Jean-Robert; and Moulin, Michel, 4,333,154, Cl. 364-559.000.

Crow, Thomas L., to Cobra Golf, Inc. II. Golf club head. 4,332,388, Cl. 273-172.000.

Crown Systems Company: *See—*
Woloszczuk, Orest, 4,332,368, Cl. 251-30.000.

Csepel Muvek Hiradastechnikai Gepgyara: *See—*
Noszticzius, Zoltan; Olah, Karoly; Vajta, Zsofia; Palmai, Gyorgy; Patonay, Gabor; and Szommer, Ferenc, 4,332,664, Cl. 204-266.000.

Culk, Raimund. Variable pitch propellers. 4,332,526, Cl. 416-166.000.

Cummins, William H.: *See—*
Chapman, Gary L.; and Cummins, William H., 4,332,086, Cl. 33-126.500.

Cunningham, Charles R.: *See—*
Stephenson, Edgar O.; Kohl, John M.; and Cunningham, Charles R., 4,332,401, Cl. 285-47.000.

Cunningham, Lee. Heated bed for animals. 4,332,214, Cl. 119-1.000.

Cuschera, Casper. Self contained seal for drains. 4,332,393, Cl. 277-112.000.

Cyloflex, Inc.: *See*—
Lovas, Joseph R.; Lovas, Paul J.; and Koelmel, Carl F., 4,332,084, Cl. 30-380.000.

D.I.E.N.E.S Apparatebau GmbH: *See*—
Brossmer, Max; and Boerner, Manfred, 4,332,151, Cl. 68-5.00E.

D. L. Auld Company, The: *See*—
Auld, David L.; and Waugh, Robert E., 4,332,074, Cl. 29-527.400.

D. Mulock-Bentley and Associates (Proprietary) Limited: *See*—
Mulock-Bentley, Desmond, 4,332,291, Cl. 165-76.000.

Dahlberg, Peter: *See*—
Thern, Rolf A. B.; and Dahlberg, Peter, 4,332,492, Cl. 400-320.000.

Daiberl, Karl. Aligning assembly for use in dentistry. 4,332,556, Cl. 433-69.000.

Daignault, Louis G.; and Schiller, Edward E., to PCA International, Inc. Removal of complexed heavy metals from waste effluents. 4,332,687, Cl. 210-721.000.

Dalibor, Horst, to Hoechst Aktiengesellschaft. Blocked polyisocyanates formed from a polyisocyanate containing biuret groups and from an acetoacetic acid alkyl ester. 4,332,965, Cl. 560-169.000.

Dalstein, Rolf; Spies, Johann; Greif, Hans-Dieter; Termath, Gunter; Unbescheid, Jurgen; and Nowoczyn, Hans-Werner, to Erno Raumfahrttechnik GmbH. Solar energy collector panel. 4,332,241, Cl. 126-450.000.

Dalton, Charles A.; and Slinkard, William E., to Celanese Corporation. Process for the oxidation of olefinically unsaturated hydrocarbons to aldehydes using attrition resistant catalysts. 4,332,971, Cl. 568-480.000.

Dalton, James M. Plasma fuel ignitors. 4,332,223, Cl. 123-253.000.

Damour, Lawrence R. Chuck for simultaneously winding a plurality of narrow product strips on cores. 4,332,356, Cl. 242-72.00B.

Dana Corporation: *See*—
Flotow, Richard A., 4,332,314, Cl. 192-89.00B.

Daniels, Raymond A.: *See*—
Cail, Norman; Daniels, Raymond A.; Eggerling, John B.; and Lammers, Gerald B., 4,332,461, Cl. 355-14.00R.

Danson, Russell J.: *See*—
Hensel, Roy; Biller, Leonhard F.; and Danson, Russell J., 4,332,454, Cl. 354-317.000.

Dataproducts New England, Inc.: *See*—
Forgue, John R.; Goldberg, Joshua I.; and Seide, Leonard, 4,333,004, Cl. 219-497.000.

Daugherty, Jerome M.: *See*—
Stecklein, Alfred L.; and Daugherty, Jerome M., 4,332,576, Cl. 474-205.000.

Davich, Luke J.: *See*—
Erickson, Jack A.; Davich, Luke J.; and Proulx, Richard W., 4,332,766, Cl. 264-249.000.

David Brown Tractors, Ltd.: *See*—
Horsfall, Harry, 4,332,285, Cl. 251-240.000.

Davis, Grover M., to Talbot-Carlson, Inc. Controlled rate exerciser and method of conditioning. 4,332,217, Cl. 119-29.000.

Davis, Harold D.: *See*—
Moldovan, Richard J.; and Davis, Harold D., 4,332,527, Cl. 417-15.000.

Davis, Paul C.; Jackson, Raymond G.; Sodomsky, Kenneth F.; and Whitson, Dennis L., to Bell Telephone Laboratories, Incorporated. Active speech network circuit for a telephone set. 4,332,984, Cl. 179-81.00R.

Davy, Lee N.: *See*—
Firth, Ronald R.; and Davy, Lee N., 4,332,463, Cl. 355-14.00R.

De Lorean Manufacturing Company: *See*—
Thompson, James A., 4,332,424, Cl. 305-35.0EB.

Deal, Carl H.: *See*—
Lieder, Charles A.; and Deal, Carl H., 4,332,781, Cl. 423-573.00G.

Dean, Robert R.; Mauleon, Jean-Louis; and Pfeiffer, Robert W. Method and apparatus for cracking residual oils. 4,332,674, Cl. 208-120.000.

Deane, Barry C.: *See*—
Epperly, William R.; Deane, Barry C.; and Brunson, Roy J., 4,332,667, Cl. 208-8.0LE.

De Busscher, Cyriel R. J., to Sperry Corporation. Combine harvester. 4,332,262, Cl. 130-27.00P.

de Claviere, Michel: *See*—
Prost, Maurice; and de Claviere, Michel, 4,332,805, Cl. 424-258.000.

Deere & Company: *See*—
Van Auwelaer, James M.; Hutchinson, Eugene B.; and Braet, Jerome A., 4,332,126, Cl. 56-10.200.

Dees, John R.: *See*—
Blackmon, Lawrence E.; Dees, John R.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-Peir, 4,332,757, Cl. 264-103.000.
Blackmon, Lawrence E.; Dees, John R.; and Mowe, Wayne T., 4,332,758, Cl. 264-103.000.

Degen, Ludwig: *See*—
Olivieri, Roberto; Eletti Bianchi, Giancarlo; Fascetti, Eugenio; Centini, Felice; Degen, Ludwig; and Marconi, Walter, 4,332,905, Cl. 435-280.000.

Deguchi, Masanobu: *See*—
Mitsuyama, Akira; Kawano, Tadaaki; Kato, Tutomu; Deguchi, Masanobu; and Katoh, Ituro, 4,332,457, Cl. 355-3.0FU.

Degussa Aktiengeselischaft: *See*—
Fischer, Wolfgang; Langer, Manfred; and Pohl, Gerhard, 4,332,935, Cl. 536-50.000.

Deleens, Gerard: *See*—
Foy, Paul; Jungblut, Camille; and Deleens, Gerard, 4,332,920, Cl. 525-408.000.

de Maight, Winfried, to Zahnradfabrik Friedrichshafen, AG. Auxiliary power steering. 4,332,303, Cl. 180-132.000.

Demarest, Frank C., to Zygo Corporation. Edge timing in an optical measuring apparatus. 4,332,475, Cl. 356-386.000.

Deminov, Alexei D.: *See*—
Mutalibov, Abdusalam A.; Murashov, Oleg D.; Makhmudov, Takhir M.; Shvartsman, Leonid M.; Deminov, Alexei D.; Podlesnykh, Valentina A.; and Spirin, Lev A., 4,332,486, Cl. 366-146.000.

deMonterey, Francis G.; Adhia, Bharat J.; and Johnson, David M., to BASF Wyandotte Corporation. Process for preparing transparent iron oxide pigment dispersions. 4,332,354, Cl. 241-16.000.

Dempster Industries, Inc.: *See*—
Smith, Roy, 4,332,524, Cl. 415-176.000.

Denisova, Ljudmila K.: *See*—
Emanuel, Nikolai M.; Konovalova, Nina P.; Povarov, Leonard S.; Shapiro, Anatoly B.; Dyachkovskaya, Raisa F.; Suskina, Valentina I.; and Denisova, Ljudmila K., 4,332,934, Cl. 536-6.400.

Denning, LeRoy M. Variable indexing pegs. 4,332,089, Cl. 33-184.500.

Dentrex Manufacturing Company: *See*—
Richardson, Howard M., 4,332,555, Cl. 433-28.000.

Dergo, Stephen J. Dowel drill fixture. 4,332,514, Cl. 408-103.000.

Descals Munt, Buenaventura. Adjustable quadrangular base for framework assembling machines. 4,332,366, Cl. 248-670.000.

De Schepper, Achille; and Coussement, Marc, to Metallutgie Hoboken-Overpelt. Process for treating an organic phase containing iron chloride, molybdenum chloride and HCl. 4,332,684, Cl. 210-634.000.

Desmet, John, to N. V. Bekaert S. A. Welded flexible screen deck. 4,332,862, Cl. 428-593.000.

Detection Sciences, Inc.: *See*—
Overland, Donald L.; and Gauvin, Glen A., 4,333,041, Cl. 318-317.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Automatic legato keying for a keyboard electronic musical instrument. 4,332,183, Cl. 84-1.260.

Deutsche Gold -und Silber-Scheideanstalt Vormals Roessler: *See*—
Beschke, Helmut; Friedrich, Heinz; and Offermanns, Heribert, 4,332,940, Cl. 546-181.000.

Deutsche Salice GmbH: *See*—
Salice, Luciano, 4,332,053, Cl. 16-370.000.

Devaud, Jacques; Costet, Jean-Robert; and Moulin, Michel, to Crouzet. Device for determining the direction of a line of sight. 4,333,154, Cl. 364-559.000.

DeVitis, Thomas N. Medical apparatus. 4,332,248, Cl. 128-214.00R.

DeVries, Adrian J., to Zenith Radio Corporation. Low reflectivity apodized surface acoustic transducer with means to prevent wavefront distortion. 4,333,065, Cl. 333-194.000.

di Benedetto, Paolo: *See*—
Gasser, Hermann; di Benedetto, Paolo; and Ferri, Johann W., 4,332,130, Cl. 57-279.000.

Dick, John O.; McKenzie, Joe A.; and Bradford, William C., to United States of America, Navy. Doppler signal processing circuit. 4,333,079, Cl. 343-7.0PF.

Dick, Richard W.: *See*—
Regueiro, William R.; Cowan, Robert W.; and Dick, Richard W., 4,333,147, Cl. 364-436.000.

DiDomenico, Mauro, Jr.; Singh, Shobha; and Van Uitert, LeGrand G., to Bell Telephone Laboratories, Incorporated. Structure of display devices. 4,332,440, Cl. 350-357.000.

Di Drusco, Giovanni; Rinaldi, Roberto; and Govoni, Gabriele, to Montedison S.p.A. Process for treating olefinic polymers with steam. 4,332,933, Cl. 528-500.000.

Diehl, Firma: *See*—
Stutzle, Dietmar, 4,332,468, Cl. 356-5.000.

Dienes, Zoltan B., to Thomas & Betts Corporation. Sealed cable enclosure and cable assembly including same. 4,332,975, Cl. 174-76.000.

Dietrich, Jurgen; Klotz, Hansjorg; and Hofer, Bernd, to Erno Raumfahrttechnick GmbH. Centrifuge. 4,332,349, Cl. 233-1.00R.

Diggins, Martin J., to Exxon Research & Engineering Co. Disposable peristaltic pump assembly for facsimile printer. 4,333,088, Cl. 346-140.00R.

Director-General of the Agency of Industrial Science and Technology, The: *See*—
Fujiwara, Ichiro; and Goto, Totaro, 4,332,139, Cl. 62-101.000.

Dittmar, Wilfried: *See*—
Franz, Reinhard; and Dittmar, Wilfried, 4,332,182, Cl. 84-1.010.

Dobler, Peter: *See*—
Schoettle, Klaus; Kaemmer, Eduard; Dobler, Peter; Gliniorz, Lothar; and Hoffmann, Werner, 4,333,116, Cl. 360-78.000.

Dolinsky, Josef. Dental floss applicator and method of anchoring dental floss units at a frame. 4,332,559, Cl. 132-91.000.

Dollenmayer, William L., to International Business Machines Corporation. Print hammer actuating device. 4,332,489, Cl. 400-172.000.

Dominico, James W.: *See*—
Skrypek, John P.; Williams, Robert; and Dominico, James W., 4,332,316, Cl. 198-425.000.

Domogalla, John C., to Texas Instruments Incorporated. N-Channel MOS comparator. 4,333,025, Cl. 307-355.000.

Douwe Egberts Koninklijke, Tabaksfabriek-Koffiebranderijen - Theehandel B.V.: *See*—
Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., 4,332,599, Cl. 62-542.000.

Douwe Egberts Koninklijke Tabaksfabriek, Koffiebranderijin en Theehandel B.V.: *See*—
Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., 4,332,140, Cl. 62-123.000.

Dow Chemical Company, The: *See—*
Anand, Joginder N.; Revak, Timothy T.; and Rossini, Frank J., 4,332,868, Cl. 429-178.000.
Karam, Henry J., 4,332,924, Cl. 526-64.000.
Markley, Lowell D., 4,332,820, Cl. 424-304.000.
Renga, James M.; and Periana-Pillai, Roy A., 4,332,729, Cl. 549-229.000.
Thill, Bruce P., 4,332,916, Cl. 521-25.000.
Woo, Edmund P.; and Mullins, Michael J., 4,332,734, Cl. 549-253.000.
Yates, Ronald L., 4,332,654, Cl. 204-158.00R.

Dow Corning Corporation: *See—*
Rainear, Dennis H., 4,332,923, Cl. 525-507.000.

Doyle, Terrence W.: *See—*
Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,332,951, Cl. 548-218.000.
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,332,732, Cl. 549-332.000.

Dragerwerk Aktiengesellschaft: *See—*
Leichnitz, Kurt, 4,332,771, Cl. 422-84.000.

Dravco Corporation: *See—*
Hansotte, Roger J., 4,332,092, Cl. 34-27.000.

Drefahl, Klaus; and Gilles, Helmut, to Metallgesellschaft Aktiengesellschaft. Gas cooler with multiply deformed lead tubes. 4,332,294, Cl. 165-157.000.

Dreier, Raymond R.: *See—*
Goebel, Virgil E.; and Dreier, Raymond R., 4,332,114, Cl. 52-36.000.

Dresser Industries, Inc.: *See—*
Amwake, Harvey E., 4,332,202, Cl. 105-199.0CB.

Drexelbrook Controls, Inc.: *See—*
Sun, Robert J.; and Maltby, Frederick L., 4,332,167, Cl. 73-304.00C.

Drum, Ian; Madenburg, Richard S.; Paulsrude, Douglas M.; Sherman, Carroll H.; Turpin, Frank G.; and Wheatcroft, Gerry A., to Home Oil Company Limited; and Morrison-Knudsen Company, Inc. Manufacture of hydrogen sulfide. 4,332,774, Cl. 422-111.000.

DuBois, Grant E., to Dynapol. Sweetening with stevioside analogs. 4,332,830, Cl. 426-548.000.

DuBois, R. Clark; and Hamma, John C., to Gradco/Dendoki, Inc. Compact sorter. 4,332,377, Cl. 271-293.000.

Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; and Maximovich, Boleslav I. Apparatus for delivery of valves and melting rings to an inductor heater for hard facing. 4,332,997, Cl. 219-9.500.

Duffy, Thomas E.: *See—*
Levy, David E.; Zwies, Alfred; and Duffy, Thomas E., 4,332,244, Cl. 128-205.250.

Dufrancatel, Michel, to Societe Anonyme: Esterel Caravanes. Folding caravan. 4,332,115, Cl. 52-66.000.

Dulin, David L., to Beach Manufacturing Corp. Self-tensioning printing cylinder lock. 4,332,197, Cl. 101-415.100.

Dumont, Claude: *See—*
Guillaume, Jacques; Nedelec, Lucien; Dumont, Claude; and Fournex, Robert, 4,332,808, Cl. 424-263.000.

Duncan, Eliot R.: *See—*
Larsen, Wallace L.; and Duncan, Eliot R., 4,332,992, Cl. 219-10.55R.

Dungan, Dennis F.; and Kuo, Wey-Chaung, to General Motors Corporation. Radio frequency interference suppressing ignition distributor. 4,332,988, Cl. 200-19.0DC.

Dunlop Limited: *See—*
Ponyik, Charles A., Jr.; and Tobias, Michael A., 4,332,701, Cl. 524-539.000.

Dunn, Richard P.: *See—*
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., 4,332,464, Cl. 355-14.00C.

Dunn, Wendell D., Jr., to Titanium Technology (Australia) Ltd. Process for beneficiating a titaniferous ore. 4,332,615, Cl. 75-1.0TI.

Dunweg, Gustav: *See—*
Henne, Werner; Bandel, Werner; and Dunweg, Gustav, 4,332,752, Cl. 264-41.000.

Dunworth, Bruce E., to Ferro Corporation. Free flowing metallurgical well powder. 4,332,910, Cl. 501-106.000.

Dupeuble, Jean-Claude: *See—*
Bru, Christian; and Dupeuble, Jean-Claude, 4,332,132, Cl. 57-280.000.

Du Pont de Nemours, E. I., and Company: *See—*
Lynch, Charles E., 4,332,762, Cl. 264-168.000.
Manos, Philip, 4,332,737, Cl. 260-404.500.
Petersen, Wallace C., 4,332,611, Cl. 71-92.000.

Duracell International Inc.: *See—*
Parsen, Frank E.; and Graham, Teresita O., 4,332,870, Cl. 429-206.000.

Dyachkovskaya, Raisa F.: *See—*
Emanuel, Nikolai M.; Konovalova, Nina P.; Povarov, Leonard S.; Shapiro, Anatoly B.; Dyachkovskaya, Raisa F.; Suskina, Valentina I.; and Denisova, Ljudmila K., 4,332,934, Cl. 536-6.400.

Dynaflair Corporation Canada, Inc.: *See—*
Stolpe, Rudolf, 4,332,287, Cl. 160-133.000.

Dynapol: *See—*
DuBois, Grant E., 4,332,830, Cl. 426-548.000.

E.N.I. Ente Nozionale Idrocarburi: *See—*
Olivieri, Roberto; Eletti Bianchi, Giancarlo; Fascetti, Eugenio; Centini, Felice; Degen, Ludwig; and Marconi, Walter, 4,332,905, Cl. 435-280.000.

E. R. Squibb & Sons, Inc.: *See—*
Korzun, John N., 4,332,726, Cl. 548-533.000.
Wade, Peter C., 4,332,812, Cl. 424-269.000.

E-Systems, Inc.: *See—*
Mosley, William H., Jr.; and Andren, Carl F., 4,333,060, Cl. 331-1.00A.

Eapen, Kuttikandathil E.: *See—*
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,332,824, Cl. 426-330.300.

Earle, Roger W.; and Walsh, William J., to Sybron Corporation. Vacuum firing porcelain furnace. 4,332,553, Cl. 432-205.000.

Eastman Kodak Company: *See—*
Firth, Ronald R.; and Davy, Lee N., 4,332,463, Cl. 355-14.00R.
Lelental, Mark; and Sutton, Richard C., 4,332,875, Cl. 430-45.000.
Phillips, Bobby M.; Casey, James O., Jr.; and Gregory, Dale R., 4,332,761, Cl. 264-147.000.
Seely, Neil G.; and Smart, David C., 4,332,453, Cl. 354-288.000.

Eaton Corporation: *See—*
Brown, Wade R., 4,332,275, Cl. 137-504.000.
Hayden, John E.; and Rutchik, Walter L., 4,333,122, Cl. 361-114.000.

Eberl, Leonhard: *See—*
Bauer, Otto; Eberl, Leonhard; Geyer, Gerhard; and Straubel, Max, 4,332,227, Cl. 123-502.000.

Ebi, Yutaka, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,333,086, Cl. 346-140.00R.

Ebisawa, Mikio: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,332,665, Cl. 204-296.000.

Eckmann, Gerald C.: *See—*
Kuus, Felix; and Eckmann, Gerald C., 4,332,298, Cl. 166-319.000.

Ecodyne Corporation: *See—*
Nowlin, Duane D.; and Winberg, Dennis G., 4,332,685, Cl. 210-638.000.

Economopoulos, Marios; and Lambert, Nicole, to Centre de Recherches Metallurgie-Centrum voor Research in de Metallurgie. Continuous cooling of low carbon steel wire rod. 4,332,630, Cl. 148-12.00B.

Eddy, Roger C. Lockable support float. 4,332,048, Cl. 441-1.000.

Eduard Rohr AG: *See—*
Rohr, Eduard, 4,332,271, Cl. 137-315.000.

Edwards, Colin W., to Hughes Aircraft Company. Semiconductor memory circuits. 4,333,166, Cl. 365-182.000.

Edwards, William B., III, to Philip Morris, Incorporated. Optically active nicotine analogs and process for their preparation. 4,332,945, Cl. 546-281.000.

Egami, Tsuneyuki: *See—*
Kawai, Hisasi; Egami, Tsuneyuki; Kohama, Tokio; and Obayashi, Hideki, 4,332,165, Cl. 73-204.000.

Eggerling, John B.: *See—*
Cail, Norman; Daniels, Raymond A.; Eggerling, John B.; and Lammers, Gerald B., 4,332,461, Cl. 355-14.00R.

Egyt Gyogyszervegyeszeti Gyar: *See—*
Fischer, Janos; Rozsa, Laszlo; Vago, Pal; Bakonyi, Anna; and Fazekas, Gabor, 4,332,725, Cl. 548-533.000.
Kuszmann, Janos; Medgyes, Gabor; Andrasy, Ferenc; and Berzsenyi, Pal, 4,332,818, Cl. 424-285.000.

Ehrhardt, Henry S., to Industrial Heat Engineering. Fabric singer burner and manifold assembly. 4,332,063, Cl. 26-3.000.

Ehrmann, Wolfgang; and Winter, Claus, to Hafele KG, Firma. Lock catch for doors. 4,332,406, Cl. 292-18.000.

Eiler, Peter: *See—*
Otto, Gunter; and Eiler, Peter, 4,332,328, Cl. 212-180.000.

Einbinder, Harvey. Ten-finger typewriter keyboards. 4,332,493, Cl. 400-484.000.

El-Fi Innovationer AB: *See—*
Comstedt, Per A. P.; and Elfner, Bo A., 4,333,118, Cl. 361-30.000.

Electric Power Research Institute, Inc.: *See—*
Crosgrove, Robert O.; Moody, Edward; and Sletten, Harold L., 4,332,639, Cl. 376-253.000.

Electrostatic Equipment Corp.: *See—*
Knudsen, Walter G., 4,332,835, Cl. 427-32.000.

Eletti Bianchi, Giancarlo: *See—*
Olivieri, Roberto; Eletti Bianchi, Giancarlo; Fascetti, Eugenio; Centini, Felice; Degen, Ludwig; and Marconi, Walter, 4,332,905, Cl. 435-280.000.

Elfner, Bo A.: *See—*
Comstedt, Per A. P.; and Elfner, Bo A., 4,333,118, Cl. 361-30.000.

Elleuch, Boubaker: *See—*
Kervennal, Jacques; Elleuch, Boubaker; and Taarit, Younes B., 4,332,739, Cl. 260-453.0PC.

Ellis, John R.: *See—*
Reynolds, Christopher C.; Claire, Earl J.; and Ellis, John R., 4,332,980, Cl. 179-2.00A.

Ellis, John T., to Illinois Tube Company. V-Belt measuring device. 4,332,087, Cl. 33-137.00R.

Ellner, Irving L.: *See—*
Raber, Samuel; and Ellner, Irving L., 4,333,093, Cl. 340-566.000.

Ellzey, Rex B., to Benton Casing Service, Inc. Oil well pipe pickup and laydown apparatus. 4,332,411, Cl. 294-104.000.

Eltra Corporation: *See—*
Mletzko, Alfred E.; and Gonet, Andrew P., 4,333,153, Cl. 364-523.000.

Eltro GmbH: *See*—
Aberle, Claus; Ruger, James F.; and Schulz, Klaus-Peter, 4,332,168, Cl. 374-130.000.
Emanuel, Nikolai M.; Konovalova, Nina P.; Povarov, Leonard S.; Shapiro, Anatoly B.; Dyachkovskaya, Raisa F.; Suskina, Valentina I.; and Denisova, Ljudmila K. 13-(1-Oxyl-2,2,6,6-tetramethylpiperylidenyl-4)hydrazone rubomycin hydrochloride with a paramagnetic center and a method of producing same. 4,332,934, Cl. 536-6.400.
Emerson, Reginald S., to Leslie Hartridge Limited. Cam box assembly. 4,332,163, Cl. 73-119.00A.
Emhart Industries, Inc.: *See*—
Cargile, Harry M., 4,332,545, Cl. 425-577.000.
Gardner, Edward B., 4,332,606, Cl. 65-158.000.
EMI Limited: *See*—
Harrison, Colin G.; and Burl, Michael, 4,333,053, Cl. 324-307.000.
Endo, Takeshi; Ogasawara, Takahisa; and Mizutani, Kiyokazu, to Toagosei Chemical Industry Co., Ltd. 2-Methylene-1,4,6-trioxaspiro[4,6]undecane, process for the preparation thereof and process for the preparation of polymers. 4,332,731, Cl. 549-334.000.
Energy Conversion Devices, Inc.: *See*—
Flasck, Richard, 4,332,466, Cl. 355-27.000.
Izu, Masatsugu; and Cannella, Vincent D., 4,332,880, Cl. 430-272.000.
Energy Research Corporation: *See*—
Charkey, Allen, 4,332,871, Cl. 429-217.000.
Engel, John F., to FMC Corporation. Insecticidal perhaloalkylvinylcyclopropanecarboxylates. 4,332,815, Cl. 424-274.000.
Engler, Kevin G. Fluid mixer. 4,332,482, Cl. 366-130.000.
English, Michael F.: *See*—
Benitez, Francisco M.; and English, Michael F., 4,332,738, Cl. 260-410.600.
Engstrom, George L.: *See*—
Waldo, Russell W.; and Engstrom, George L., 4,332,407, Cl. 292-161.000.
Ennis, George T., to N/S Car Wash Enterprises, Inc. Method for brushing the front, sides and rear of a vehicle. 4,332,625, Cl. 134-6.000.
Enokita, Ryuzou: *See*—
Arai, Mamoru; Torikata, Akio; Enokita, Ryuzou; Haneishi, Tatsuo; and Nakajima, Mutsuo, 4,332,902, Cl. 435-253.000.
Enomoto, Hiroshi: *See*—
Iwai, Kazuhiro; and Enomoto, Hiroshi, 4,332,310, Cl. 188-218.00A.
Enomoto, Satoru: *See*—
Asano, Kiro; Tamura, Humio; Tanaka, Hiromitsu; and Enomoto, Satoru, 4,332,797, Cl. 424-238.000.
Enting, David E.: *See*—
Frohwerk, Arthur E.; and Enting, David E., 4,332,327, Cl. 206-604.000.
Epperly, William R.; Deane, Barry C.; and Brunson, Roy J., to Exxon Research & Engineering Co. Liquefaction process for solid carbonaceous materials containing alkaline earth metal humates. 4,332,667, Cl. 208-8.0LE.
Erckel, Rudiger: *See*—
Bicker, Richard; and Erckel, Rudiger, 4,332,943, Cl. 546-253.000.
Erdos, Adorjan: *See*—
Ghyczy, Miklos; Erdos, Adorjan; Heidemann, Gunter; and Ritzmann, Gotz, 4,332,795, Cl. 424-199.000.
Erickson, Jack A.; Davich, Luke J.; and Proulx, Richard W., to Federal Cartridge Corporation. One-piece shotshell. 4,332,766, Cl. 264-249.000.
Erickson, John W., to Kobe, Inc. High speed jet rotating casing apparatus. 4,332,521, Cl. 415-189.000.
Erion, Jeffrey A., to Ford Motor Company. Window assembly. 4,332,413, Cl. 296-84.00R.
Erno Raumfahrttechnick GmbH: *See*—
Dietrich, Jurgen; Klotz, Hansjorg; and Hofer, Bernd, 4,332,349, Cl. 233-1.00R.
Erno Raumfahrttechnik GmbH: *See*—
Dalstein, Rolf; Spies, Johann; Greif, Hans-Dieter; Termath, Gunter; Unbescheid, Jurgen; and Nowoczyn, Hans-Werner, 4,332,241, Cl. 126-450.000.
Esformes, Ira; and Kummer, Frederick J., to Hospital for Joint Disease Orthopaedic Institute. Artificial joint. 4,332,037, Cl. 3-1.910.
Esposito, James E., to Union Carbide Corporation. Solutions of bromoxynil and ioxynil. 4,332,613, Cl. 71-105.000.
Essery, John M.: *See*—
Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., 4,332,951, Cl. 548-218.000.
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,332,732, Cl. 549-332.000.
Essex Chemical Corporation: *See*—
Roggenburg, Stanley L., Jr.; and Tully, Michael E., 4,332,750, Cl. 264-23.000.
Estenevy, Serge, to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement. Electric control weapon, operation and ammunition therefor. 4,332,098, Cl. 42-84.000.
Etschenberg, Eugen; Jacobi, Haireddin; and Opitz, Wolfgang, to Troponwerke GmbH & Co. KG. Antiphlogistic agent and its use. 4,332,819, Cl. 424-301.000.
Eugster, Peter; and Koller, Stefan, to Ciba-Geigy Corporation. Disperse dye stable to dyeing, and its use for dyeing and printing synthetic and semi-synthetic fibre materials. 4,332,588, Cl. 8-526.000.
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Burgers, August, 4,332,495, Cl. 403-6.000.
Eurosil GmbH: *See*—
Hentzschel, Hans; and Ludwig, Soni-Enrico, 4,333,098, Cl. 340-805.000.
Evans, Robert W., to Baker International Corporation. Ball valve assembly. 4,332,267, Cl. 137-1.000.
Ewing, Charles W. Flashlight with battery separator. 4,333,129, Cl. 362-205.000.
Ex-Cell-O Corporation: *See*—
Moran, John P., 4,332,345, Cl. 229-37.00R.
Expert Automation, Inc.: *See*—
Rust, Norbert, 4,332,176, Cl. 74-110.000.
Exxon Research & Engineering Co.: *See*—
Bacsik, George J., 4,332,546, Cl. 431-5.000.
Baset, Zeinab, 4,332,675, Cl. 208-254.00R.
Baset, Zeinab, 4,332,676, Cl. 208-254.00R.
Bauman, Richard F.; and Ryan, Daniel F., 4,332,666, Cl. 208-8.0LE.
Benitez, Francisco M.; and English, Michael F., 4,332,738, Cl. 260-410.600.
Brunson, Roy J., 4,332,668, Cl. 208-8.0LE.
Diggins, Martin J., 4,333,088, Cl. 346-140.00R.
Epperly, William R.; Deane, Barry C.; and Brunson, Roy J., 4,332,667, Cl. 208-8.0LE.
Faerber, Nelson A.; and Bonner, Edgar L. Television editing system. 4,333,110, Cl. 358-165.000.
Fah, Hansjakob; Farooq, Saleem; Grieder, Alfred; and Scheuzger, Karl, to Ciba-Geigy Corporation. 1,3-Benzodithiol-2-N,N-dialkyliminium salts and pesticidal use. 4,332,811, Cl. 424-267.000.
Fairchild Camera & Instrument Corp.: *See*—
Kant, Rajni, 4,332,070, Cl. 29-578.000.
Falzarano, Anthony V.: *See*—
Milden, Morton; and Falzarano, Anthony V., 4,332,383, Cl. 273-64.000.
Farooq, Saleem: *See*—
Fah, Hansjakob; Farooq, Saleem; Grieder, Alfred; and Scheuzger, Karl, 4,332,811, Cl. 424-267.000.
Farrell, Sherman R., to RPC Industries. Anode foil holder for broad beam electron gun. 4,333,036, Cl. 313-420.000.
Farrington, Jeffrey G., to International Standard Electric Corporation. Optical fiber repeater. 4,333,178, Cl. 455-601.000.
Fascetti, Eugenio: *See*—
Olivieri, Roberto; Eletti Bianchi, Giancarlo; Fascetti, Eugenio; Centini, Felice; Degen, Ludwig; and Marconi, Walter, 4,332,905, Cl. 435-280.000.
Faulhaber, Fritz. Solid-state commutator for use in electric motors. 4,333,015, Cl. 250-551.000.
Fawley, Norman C. Rotatable valve protector for compressed gas cylinder. 4,332,331, Cl. 220-85.00P.
Fazekas, Gabor: *See*—
Fischer, Janos; Rozsa, Laszlo; Vago, Pal; Bakonyi, Anna; and Fazekas, Gabor, 4,332,725, Cl. 548-533.000.
Federal Cartridge Corporation: *See*—
Erickson, Jack A.; Davich, Luke J.; and Proulx, Richard W., 4,332,766, Cl. 264-249.000.
Federal Paper Board Company, Inc.: *See*—
Manizza, Guelfo A., 4,332,325, Cl. 206-216.000.
Feibelman, Jeffrey A., to A & H Mfg. Co. Pendant display card. 4,332,320, Cl. 206-45.140.
Feichtner, Hannes: *See*—
Haslmayr, Johann; and Feichtner, Hannes, 4,332,551, Cl. 432-19.000.
Feldman, Michael A. Storage vial for soft contact lenses. 4,332,318, Cl. 206-5.100.
Felthuis, Jacob: *See*—
van Laar, Jacobus; Felthuis, Jacob; and Kastelic, Wilhelmus A. J., 4,332,554, Cl. 432-233.000.
Ferranti Limited: *See*—
McLeod, John, 4,332,636, Cl. 156-289.000.
Ferrentino, Antonio, to Industrie Pirelli Societa per Azioni. Method and apparatus for recovering a length of an elongated body, submerged in water. 4,332,510, Cl. 405-171.000.
Ferri, Johann W.: *See*—
Gasser, Hermann; di Benedetto, Paolo; and Ferri, Johann W., 4,332,130, Cl. 57-279.000.
Ferro Corporation: *See*—
Dunworth, Bruce E., 4,332,910, Cl. 501-106.000.
Searight, Charles E.; and Heasley, James H., 4,332,437, Cl. 350-103.000.
Fiber Industries, Inc.: *See*—
Blackmon, Lawrence E.; Dees, John R.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-Peir, 4,332,757, Cl. 264-103.000.
Blackmon, Lawrence E.; Dees, John R.; and Mowe, Wayne T., 4,332,758, Cl. 264-103.000.
Brayford, John R.; and Cardell, Max L., 4,332,764, Cl. 264-176.00F.
Fichtel & Sachs AG: *See*—
Hengst, Bernd; Grosspietsch, Wolfgang; and Ognibeni, Karl-Heinz, 4,332,679, Cl. 210-90.000.
Fickert, Werner: *See*—
Orth, Winfried; Lange, Fritz W.; and Fickert, Werner, 4,332,728, Cl. 548-519.000.
Fiedler, Volker: *See*—
Schonafinger, Karl; Beyerle, Rudi; Nitz, Rolf-Eberhard; Martorana, Piero A.; and Fiedler, Volker, 4,332,801, Cl. 424-246.000.
Field Electronics Inc.: *See*—
Jenkins, John P.; Rector, Stephen W.; McCarty, John J.; and Hammond, William, 4,333,096, Cl. 340-684.000.

Field, Max N. Communication aid means and method. 4,333,092, Cl. 340-378.200.
Filtrol Corporation: *See*—
Scherzer, Julius; and Liu, Anh-Thu, 4,332,782, Cl. 423-628.000.
Fiorentini, Carlo, to Afros S.r.l. Head for mixing and ejecting interacting liquid components, for molding plastic materials. 4,332,335, Cl. 222-145.000.
Firestone, Raymond A., to Merck & Co., Inc. Allylsulfoxide enzyme inhibitors. 4,332,813, Cl. 424-273.00R.
First National Supermarkets, Inc.: *See*—
Mart, Clyde D., 4,332,190, Cl. 99-538.000.
Firth, Ronald R.; and Davy, Lee N., to Eastman Kodak Company. Non-synchronous operation of an electronic copier. 4,332,463, Cl. 355-14.00R.
Fischer, Janos; Rozsa, Laszlo; Vago, Pal; Bakonyi, Anna; and Fazekas, Gabor, to Egyt Gyogyszervegyeszeti Gyar. Process for the preparation of 1-[3-mercapto-(2S)-methylpropionyl]-pyrrolidine-(2S)-carboxylic acid. 4,332,725, Cl. 548-533.000.
Fischer, Joseph; and Platz, Gerald M., to National Distillers & Chemical Corp. Can cover. 4,332,846, Cl. 428-131.000.
Fischer, Mark L. Electronic environmental acoustic simulator. 4,332,979, Cl. 179-1.0GQ.
Fischer, Siegbert: *See*—
Mauer, Eberhard; Fischer, Siegbert; and Pfalzer, Lothar, 4,332,638, Cl. 162-4.000.
Fischer, Wolfgang; Langer, Manfred; and Pohl, Gerhard, to Degussa Aktiengesellschaft. Process for the production of cationic starch ethers. 4,332,935, Cl. 536-50.000.
Fisher, John M., to B. F. Goodrich Company, The. Escape slide and protective shield. 4,332,049, Cl. 441-80.000.
Fitch, Robert E.: *See*—
Tucker, Gordon H.; and Fitch, Robert E., 4,332,206, Cl. 110-203.000.
Fitz, Forest G., Jr.: *See*—
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,332,677, Cl. 209-3.000.
Flanders, Robert L.: *See*—
Blanton, William A., Jr.; and Flanders, Robert L., 4,332,672, Cl. 208-120.000.
Flasck, Richard, to Energy Conversion Devices, Inc. Apparatus for producing microform records at high speed from computer or other electrical data signal sources. 4,332,466, Cl. 355-27.000.
Fleer, Ernst-Otto: *See*—
Schuss, Werner; and Fleer, Ernst-Otto, 4,332,562, Cl. 433-126.000.
Fleming, Michael P., to Syntex (U.S.A.) Inc. Process for preparing N-vinyl carbazoles. 4,332,723, Cl. 548-444.000.
Fletcher, Bert B.: *See*—
Worth, Joseph P.; and Fletcher, Bert B., 4,333,069, Cl. 338-315.000.
Flight Systems, Inc.: *See*—
York, Robert A., 4,333,101, Cl. 357-79.000.
Flinchbaugh, Anna M., executrix: *See*—
Flinchbaugh, Donald E., deceased, 4,332,110, Cl. 51-165.780.
Flinchbaugh, Donald E., deceased (by Flinchbaugh, Anna M., executrix), to Weldon Hydraulics, Inc. Automatically adjustable grinding wheel. 4,332,110, Cl. 51-165.780.
Flink, John A., to Precision Monolithics, Inc. Starting circuit with precise turn-off. 4,333,047, Cl. 323-311.000.
Flotow, Richard A., to Dana Corporation. Spring clutch. 4,332,314, Cl. 192-89.00B.
Flowers, Robert. Railway car floor assembly apparatus. 4,332,203, Cl. 105-422.000.
FMC Corporation: *See*—
Engel, John F., 4,332,815, Cl. 424-274.000.
Foh, Stephen E.; Mazumder, Mono M.; and Pangborn, Jon B., to Gas Research Institute. Thermoelectrochemical process using copper oxide for producing hydrogen and oxygen from water. 4,332,650, Cl. 204-104.000.
Foley, Clifford T.; and Brandenfels, Carl W. Combined hammer and level. 4,332,046, Cl. 7-146.000.
Ford, James M.; and Adams, John O., to Olin Corporation. Cells having gasket lubricating means. 4,332,661, Cl. 204-253.000.
Ford, Michael A.: *See*—
Chamran, Morteza M.; Scott, Larkin B.; Williams, Paul B.; and Ford, Michael A., 4,332,470, Cl. 356-325.000.
Ford Motor Company: *See*—
Erion, Jeffrey A., 4,332,413, Cl. 296-84.00R.
Sabel, Gustav; and Schellens, Horst, 4,332,312, Cl. 192-4.00C.
Forgue, John R.; Goldberg, Joshua I.; and Seide, Leonard, to Dataproducts New England, Inc. Detecting ice forming weather conditions. 4,333,004, Cl. 219-497.000.
Form Flo Equipment Manufacturers Inc.: *See*—
Thompson, Doyle D., 4,332,581, Cl. 493-413.000.
Formigraphic Engine Corporation: *See*—
Swainson, Wyn K.; and Kramer, Stephen D., 4,333,165, Cl. 365-120.000.
Foster Wheeler Energy Corporation: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,332,218, Cl. 122-4.00D.
Fournex, Robert: *See*—
Guillaume, Jacques; Nedelec, Lucien; Dumont, Claude; and Fournex, Robert, 4,332,808, Cl. 424-263.000.
Foust, Robert K. Body support frame for a casket. 4,332,064, Cl. 27-12.000.
Fox, Jack N.: *See*—
Chertock, Alan J., deceased; Fox, Jack N.; and Weissinger, Robert B., 4,332,640, Cl. 376-264.000.
Fox, Karl M.: *See*—
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,332,593, Cl. 44-51.000.
Foy, Paul; Jungblut, Camille; and Deleens, Gerard, to ATO Chimie. Mouldable and extrudable polyether-ester-amide block copolymers. 4,332,920, Cl. 525-408.000.
Fraas, Lewis M., to Chevron Research Company. Multilayer photovoltaic cell. 4,332,974, Cl. 136-249.000.
Francis, Gaylord L., to North American Philips Corporation. Temperature sensor. 4,332,081, Cl. 29-612.000.
Frank, Jonathan M., to Uniforms To You & Co. Adjustable dress. 4,332,033, Cl. 2-105.000.
Frank, Julius: *See*—
Lutz, Alfons; Schatzler, Walter; Jardin, Hans; Sielk, Werner; and Frank, Julius, 4,332,416, Cl. 296-216.000.
Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., to PPG Industries, Inc. Plastic surface treatment. 4,332,861, Cl. 428-520.000.
Franz, Reinhard; and Dittmar, Wilfried, to Franz, Reinhard. Apparatus for transposing passages in electronic musical instruments. 4,332,182, Cl. 84-1.010.
Fraunhofer Gesellschaft zur Forderung der argewandten Forschung e.v.: *See*—
Nicolaisen, Peter, 4,332,989, Cl. 200-47.000.
Freedman, Morris D.: *See*—
Whiteside, Arliss E.; Freedman, Morris D.; and Tasar, Omur, 4,333,144, Cl. 364-200.000.
Freeland, John L. Artificial hand. 4,332,038, Cl. 3-12.600.
Fremont, Henry A., to Champion International Corporation. Polyethylene recovery from broke. 4,332,748, Cl. 264-11.000.
Frentzel, Kurt H.; and Oskam, Herman, to Hunter Douglas Internation, N.V. Pull carrier for vertically louvered venetian blind. 4,332,288, Cl. 160-176.00R.
Freudenberg, Carl: *See*—
Yamauchi, Katsuyoshi; and Nakai, Kiyoto, 4,332,633, Cl. 156-62.200.
Freudenstein, Ferdinand: *See*—
Maki, Emil R.; and Freudenstein, Ferdinand, 4,332,148, Cl. 464-102.000.
Frick, William C.; and Powell, John M., to General Electric Company. Household refrigerator and method of construction. 4,332,429, Cl. 312-236.000.
Friedli, Hans; and Arnold, Erwin, to Swiss Aluminium Ltd. Storage bunker device for feeding electrolytic cell. 4,332,660, Cl. 204-245.000.
Friedrich, Heinz: *See*—
Beschke, Helmut; Friedrich, Heinz; and Offermanns, Heribert, 4,332,940, Cl. 546-181.000.
Frisquet, Maurice, to Anciens Etablissements M. Frisquet. Disconnector for drinking water distribution system. 4,332,274, Cl. 137-496.000.
Frohwerk, Arthur E.; and Enting, David E., to Procter & Gamble Company, The. Accurately placed stress concentrating aperture in flexible packages. 4,332,327, Cl. 206-604.000.
Frosch, Franz: *See*—
Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., 4,332,791, Cl. 424-52.000.
Frumen, Bernard: *See*—
Meunier, Jean P.; Barthe, Marie P.; Have, Serge; and Frumen, Bernard, 4,332,754, Cl. 264-45.500.
Fugner, Armin: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,332,802, Cl. 424-251.000.
Fuji Photo Film Co., Ltd.: *See*—
Akimura, Yoshitaka; Hirano, Shigeo; Mifune, Hiroyuki; and Okutsu, Eiichi, 4,332,878, Cl. 430-264.000.
Aoki, Kozo; Kojima, Tetsuro; Furutachi, Nobuo; and Sawada, Satoru, 4,332,886, Cl. 430-551.000.
Ichii, Hirokazu, 4,332,451, Cl. 354-234.000.
Ohmatsu, Hideki, 4,332,885, Cl. 430-506.000.
Tanaka, Yasunori; Noda, Shinji; and Chikamasa, Hiroshi, 4,332,840, Cl. 427-130.000.
Fuji Photo Optical Co., Ltd.: *See*—
Hosono, Tsutomu, 4,332,445, Cl. 354-106.000.
Fujikawa, Kanichi: *See*—
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,332,961, Cl. 560-62.000.
Fujioka, Akira: *See*—
Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, 4,332,859, Cl. 428-412.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,332,798, Cl. 424-246.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,332,800, Cl. 424-246.000.
Fujitsu Fanuc Limited: *See*—
Kawada, Shigeki; and Ishida, Hiroshi, 4,333,042, Cl. 318-811.000.
Fujitsu Limited: *See*—
Kato, Seiji; Ueno, Norio; Kakuishi, Mitsuo; Ito, Akihiko; and Iwata, Atsushi, 4,333,064, Cl. 333-173.000.
Orikabe, Yasuo; and Matsuda, Masakazu, 4,333,164, Cl. 365-104.000.
Fujiwara, Ichiro; and Goto, Totaro, to Director-General of the Agency of Industrial Science and Technology, The. Method for storage and recovery of thermal energy. 4,332,139, Cl. 62-101.000.
Fukahori, Yoshihide; Katacka, Nobuyuki; and Anzai, Shiro, to Bridgestone Tire Co., Ltd. Nitrile rubber composition having high modulus. 4,332,918, Cl. 525-259.000.

Fukui, Tsugushi: *See*—
Inoue, Kimio; Ogawa, Katsumi; Fukui, Tsugushi; Asai, Toshihiro; and Hashizume, Shinji, 4,332,481, Cl. 366-84.000.

Fukushima, Danji: *See*—
Nakano, Eiichi; Saito, Narimasa; and Fukushima, Danji, 4,332,897, Cl. 435-172.000.

Fuller, David L., to Scripto, Inc. Gas pressure regulator for lighters. 4,332,549, Cl. 431-344.000.

Fulton, John L.; and Hopfe, Harold H., to Monsanto Company. Extrusion die with melt flow control. 4,332,543, Cl. 425-461.000.

Funabashi, Motohisa: *See*—
Wakamori, Fumio; Funabashi, Motohisa; Kata, Mamoru; Hirano, Takazo; and Onari, Mikihiko, 4,332,507, Cl. 405-92.000.

Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, to Sumitomo Chemical Company, Limited. Coated materials and production thereof. 4,332,859, Cl. 428-412.000.

Furuichi, Shuhei, to Kabushiki Kaisha Morita Seisakusho. Automatic blackening degree adjustment system. 4,333,012, Cl. 250-409.000.

Furukawa, Akira: *See*—
Yoshimura, Junjiro; Furukawa, Akira; and Ando, Takehiro, 4,332,268, Cl. 137-81.100.

Furutachi, Nobuo: *See*—
Aoki, Kozo; Kojima, Tetsuro; Furutachi, Nobuo; and Sawada, Satoru, 4,332,886, Cl. 430-551.000.

Furuya, Shigeru: *See*—
Hujimoto, Yoshio; Kochi, Tadashi; and Furuya, Shigeru, 4,333,131, Cl. 362-372.000.

GAF Corporation: *See*—
Brown, Michael J., 4,332,612, Cl. 71-95.000.

Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., to International Harvester Company. Polyimide foams. 4,332,656, Cl. 204-159.140.

Gallagher, Alfred H. Method and apparatus for cooking food in an enclosed chamber. 4,332,828, Cl. 426-523.000.

Gallimore, Kenneth: *See*—
Crooke, Peter A.; and Gallimore, Kenneth, 4,332,753, Cl. 264-44.000.

Gamble, Robert L.: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,332,218, Cl. 122-4.00D.

Gammans, Richard E.: *See*—
Mayol, Robert F.; and Gammans, Richard E., 4,332,803, Cl. 424-267.000.

Gandy, Richard G.; and Briggs, Garry L., to BJ-Hughes Inc. Expansive admixture. 4,332,619, Cl. 106-87.000.

Ganz, Jorg, to Sig Societe Industrielle Suisse. Tamping device for railway tamping machine. 4,332,200, Cl. 104-12.000.

Garberick, Thayne K. Coil cleaning device and system. 4,332,292, Cl. 165-95.000.

Garcia, Raul, Jr. Solar tracking system. 4,332,238, Cl. 126-425.000.

Gardner, Edward B., to Emhart Industries, Inc. Ware identifying apparatus for glassware machines and the like. 4,332,606, Cl. 65-158.000.

Garrett Corporation, The: *See*—
Silver, Alexander, 4,332,079, Cl. 29-598.000.

Garthe, Hellmut, to Klockner-Humboldt-Deutz Aktiengesellschaft. Device for indicating the economical operating range of an engine. 4,332,162, Cl. 73-117.300.

Gas Research Institute: *See*—
Foh, Stephen E.; Mazumder, Mono M.; and Pangborn, Jon B., 4,332,650, Cl. 204-104.000.

Gasser, Clive G.; and Russell, John, to BP Chemicals Limited. Process for the liquid phase production of C_1 to C_3 carboxylic acids. 4,332,743, Cl. 562-512.200.

Gasser, Hermann; di Benedetto, Paolo; and Ferri, Johann W., to Luwa AG. Apparatus for infeeding textile band material to a consumer. 4,332,130, Cl. 57-279.000.

Gastrock, William H.: *See*—
Bentley, Terence J.; Gastrock, William H.; and Asato, Goro, 4,332,724, Cl. 260-326.00S.

Gates Rubber Company, The: *See*—
Stecklein, Alfred L.; and Daugherty, Jerome M., 4,332,576, Cl. 474-205.000.

Gauch, Hermann, to Union Special G.m.b.H. Thread trimming mechanism for sewing machines. 4,332,209, Cl. 112-287.000.

Gauvin, Glen A.: *See*—
Overland, Donald L.; and Gauvin, Glen A., 4,333,041, Cl. 318-317.000.

Geller, William L., to GTE Laboratories Incorporated. Color demodulating apparatus with cross-color cancellation. 4,333,104, Cl. 358-23.000.

Genequand, Pierre; and Gross, Daniel M., to Battelle Memorial Institute. Hydrogen generator utilizing solar energy to dissociate water. 4,332,775, Cl. 422-112.000.

General Dynamics Corporation: *See*—
Hailey, Samuel I.; and Kaler, George M., Jr., 4,332,066, Cl. 29-26.00R.
Slysh, Paul, 4,332,501, Cl. 403-219.000.

General Dynamics, Pomona Division: *See*—
Speicher, John M., 4,332,426, Cl. 308-2.00R.

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Tolentino, Luisito A., 4,332,956, Cl. 556-442.000.
Urban, Raymond C., 4,332,836, Cl. 427-44.000.

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Cox, Francis G.; and Ricketts, William J., 4,332,225, Cl. 123-440.000.
Dungan, Dennis F.; and Kuo, Wey-Chaung, 4,332,988, Cl. 200-19.0DC.
Griffin, Henry W.; and Hollar, Arthur W., Jr., 4,332,056, Cl. 16-341.000.
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Bauer, Otto; Eberl, Leonhard; Geyer, Gerhard; and Straubel, Max, 4,332,227, Cl. 123-502.000.

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Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,332,487, Cl. 400-126.000.

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Schoettle, Klaus; Kaemmer, Eduard; Dobler, Peter; Gliniorz, Lothar; and Hoffmann, Werner, 4,333,116, Cl. 360-78.000.

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Forgue, John R.; Goldberg, Joshua I.; and Seide, Leonard, 4,333,004, Cl. 219-497.000.

Goldstein, Richard N., to President and Fellows of Harvard College. Cloning vector. 4,332,901, Cl. 435-235.000.

Gonet, Andrew P.: *See*—
Mletzko, Alfred E.; and Gonet, Andrew P., 4,333,153, Cl. 364-523.000.

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Barozzi, Gian P.; and Goreschi, Giancarlo, 4,332,488, Cl. 400-161.500.
Gorin, Brian A.; and Hardy, James A., to NCR Corporation. Multifocal holographic scanning system. 4,333,006, Cl. 235-457.000.
Goring, Brian H.: *See—*
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Goto, Jiro: *See—*
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Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,332,800, Cl. 424-246.000.
Goto, Totaro: *See—*
Fujiwara, Ichiro; and Goto, Totaro, 4,332,139, Cl. 62-101.000.
Govoni, Gabriele: *See—*
Di Drusco, Giovanni; Rinaldi, Roberto; and Govoni, Gabriele, 4,332,933, Cl. 528-500.000.
Gowanlock, Thomas W., to General Electric Company. Face grooving tool. 4,332,513, Cl. 407-101.000.
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DuBois, R. Clark; and Hamma, John C., 4,332,377, Cl. 271-293.000.
Graham, Teresita O.: *See—*
Parsen, Frank E.; and Graham, Teresita O., 4,332,870, Cl. 429-206.000.
Gray, Joseph E.: *See—*
Alaimo, Robert J.; Gray, Joseph E.; and Klein, George M., 4,332,735, Cl. 549-496.000.
Greany, John K.: *See—*
Korklan, Harris J.; and Greany, John K., 4,332,852, Cl. 428-331.000.
Great Lakes Carbon Corporation: *See—*
Hsu, Harry L., 4,332,856, Cl. 428-408.000.
Grech, Leonard. Adjustable power transmitting device. 4,332,147, Cl. 464-109.000.
Green, Stanley, to Lucas Industries Limited. Lens element. 4,332,438, Cl. 350-167.000.
Gregory, Dale R.: *See—*
Phillips, Bobby M.; Casey, James O., Jr.; and Gregory, Dale R., 4,332,761, Cl. 264-147.000.
Greidanus, Pieter J.: *See—*
Heslinga, Adolf; and Greidanus, Pieter J., 4,332,917, Cl. 521-134.000.
Greif, Hans-Dieter: *See—*
Dalstein, Rolf; Spies, Johann; Greif, Hans-Dieter; Termath, Gunter; Unbescheid, Jurgen; and Nowoczyn, Hans-Werner, 4,332,241, Cl. 126-450.000.
Grieder, Alfred: *See—*
Fah, Hansjakob; Farooq, Saleem; Grieder, Alfred; and Scheuzger, Karl, 4,332,811, Cl. 424-267.000.
Griffin, Henry W.; and Hollar, Arthur W., Jr., to General Motors Corporation. Infinite position door hold-open. 4,332,056, Cl. 16-341.000.
Griffin, James G.: *See—*
Schwarz, Frederick M.; Griffin, James G.; and Gudaitus, Vytautis P., 4,332,133, Cl. 60-39.750.
Griffith, Gerald W., to James Dole Corporation. Magnetic actuation methods and apparatus. 4,332,450, Cl. 354-234.000.
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Groman, Ernest V.: *See—*
Cabelli, Michael D.; and Groman, Ernest V., 4,332,786, Cl. 424-1.000.
Gross, Daniel M.: *See—*
Genequand, Pierre; and Gross, Daniel M., 4,332,775, Cl. 422-112.000.
Gross, Jurgen, to Hoechst Aktiengesellschaft. Cuvette with tub-shaped bottom for the optical examination of liquids. 4,332,471, Cl. 356-246.000.
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Hengst, Bernd; Grosspietsch, Wolfgang; and Ognibeni, Karl-Heinz, 4,332,679, Cl. 210-90.000.
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GTE Automatic Electric Laboratories, Inc.: *See—*
Lee, Man S., 4,333,157, Cl. 364-802.000.
GTE Laboratories Incorporated: *See—*
Geller, William L., 4,333,104, Cl. 358-23.000.
GTE Products Corporation: *See—*
Wyner, Elliot F.; Gutta, John J.; and Parrott, Richard A., 4,333,032, Cl. 313-181.000.
Gudaitus, Vytautis P.: *See—*
Schwarz, Frederick M.; Griffin, James G.; and Gudaitus, Vytautis P., 4,332,133, Cl. 60-39.750.
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Schulz, Johann G. D.; and Cobler, John A., 4,332,695, Cl. 252-312.000.
Gulf & Western Industries, Inc.: *See—*
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,332,593, Cl. 44-51.000.
Gulf & Western Manufacturing Company: *See—*
Smith, Joseph E., Jr.; and Trudeau, William H., 4,332,500, Cl. 403-114.000.
Gupta, Ved P.: *See—*
Crocker, Zenas; and Gupta, Ved P., 4,332,479, Cl. 366-77.000.
Gurwicz, David, to Chloride Group Limited. Converters. 4,333,134, Cl. 363-17.000.
Gutnick, Morton. Devices and methods for the prevention of transmission of venereal disease and non-gonococcal genital infections. 4,332,243, Cl. 128-132.00R.
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Cordingley, Lowell A.; and Gutschick, Lester C., 4,333,033, Cl. 313-407.000.
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Wyner, Elliot F.; Gutta, John J.; and Parrott, Richard A., 4,333,032, Cl. 313-181.000.
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Haber, Edgar: *See—*
Homcy, Charles J.; and Haber, Edgar, 4,332,787, Cl. 424-1.000.
Hafele KG, Firma: *See—*
Ehrmann, Wolfgang; and Winter, Claus, 4,332,406, Cl. 292-18.000.
Hagii, Hidehiko: *See—*
Kato, Kenji; and Hagii, Hidehiko, 4,332,740, Cl. 260-453.0RZ.
Hagiwara, Miyuki: *See—*
Makuuchi, Keizo; Katakai, Akio; Hagiwara, Miyuki; Yamamoto, Tsutomu; Nakayama, Hiroyuki; and Takagi, Tohru, 4,332,657, Cl. 204-159.220.
Hague International: *See—*
LaHaye, Paul G.; Bjerklie, John W.; and Penty, Robert A., 4,332,295, Cl. 165-178.000.
Hahn, Erwin: *See—*
Hoch, Helmut; Hahn, Erwin; and Hiller, Heinrich, 4,332,955, Cl. 549-56.000.
Hailey, Samuel I.; and Kaler, George M., Jr., to General Dynamics Corporation. Compliance mechanism. 4,332,066, Cl. 29-26.00R.
Haimila, Matti: *See—*
Lario, Heikki; and Haimila, Matti, 4,332,353, Cl. 241-14.000.
Hakim, Carlos A.: *See—*
Hakim, Salomon; and Hakim, Carlos A., 4,332,255, Cl. 128-350.00V.
Hakim Company Limited: *See—*
Hakim, Salomon; and Hakim, Carlos A., 4,332,255, Cl. 128-350.00V.
Hakim, Salomon; and Hakim, Carlos A., to Hakim Company Limited. Shunt valve. 4,332,255, Cl. 128-350.00V.
Hall, John M.: *See—*
Sargent, Raymond F.; and Hall, John M., 4,332,427, Cl. 308-9.000.
Hamada, Mitsuo; Yasuda, Sadami; and Hasegawa, Chiichiro, to Toray Silicone Limited. Silicone compositions for adhesion and method for adhering silicone rubber to a substrate. 4,332,844, Cl. 427-387.000.
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Hamashima, Yoshio: *See—*
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,332,722, Cl. 260-245.400.
Hamma, John C.: *See—*
DuBois, R. Clark; and Hamma, John C., 4,332,377, Cl. 271-293.000.
Hammele, Karl, to Robert Bosch GmbH. Compression type refrigeration device. 4,332,528, Cl. 417-45.000.
Hammond, William: *See—*
Jenkins, John P.; Rector, Stephen W.; McCarty, John J.; and Hammond, William, 4,333,096, Cl. 340-684.000.
Hane, Toshioki: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,332,665, Cl. 204-296.000.
Haneishi, Tatsuo: *See—*
Arai, Mamoru; Torikata, Akio; Enokita, Ryuzou; Haneishi, Tatsuo; and Nakajima, Mutsuo, 4,332,902, Cl. 435-253.000.
Hanlon, James H.: *See—*
Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., 4,332,861, Cl. 428-520.000.
Hannebauer, Friedbert: *See—*
Lubbers, Dietrich W.; and Hannebauer, Friedbert, 4,332,439, Cl. 350-320.000.
Hannebaum, Harold W. Rotating air draft fireplace. 4,332,235, Cl. 126-120.000.
Hansotte, Roger J., to Dravco Corporation. Process and apparatus for desolventizing and drying solvent wet materials. 4,332,092, Cl. 34-27.000.
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Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,332,942, Cl. 546-240.000.
Hardy, James A.: *See—*
Gorin, Brian A.; and Hardy, James A., 4,333,006, Cl. 235-457.000.

Hargrove, Jasper E. Reloading press priming arm loader and actuator. 4,332,185, Cl. 86-36.000.

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Harrington, Edward R.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; Bolen, Charles E.; and Harrington, Edward R., 4,332,704, Cl. 523-203.000.

Harrington Manufacturing Company: *See—*
Prince, Arvin W., 4,332,128, Cl. 56-27.500.

Harris Corporation: *See—*
Morcom, William R.; Nicolay, Hugh C.; and Peters, Jeffrey D., 4,333,100, Cl. 357-71.000.
Reynolds, Christopher C.; Claire, Earl J.; and Ellis, John R., 4,332,980, Cl. 179-2.00A.

Harris, Frederick J., to Olin Corporation. Piston tool buffer assembly. 4,332,340, Cl. 227-10.000.

Harris, Stephen H.: *See—*
Statton, Gary L.; and Harris, Stephen H., 4,332,741, Cl. 260-453.0SP.

Harrison, Colin G.; and Burl, Michael, to EMI Limited. Imaging systems. 4,333,053, Cl. 324-307.000.

Harth, Helmut: *See—*
Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., 4,332,791, Cl. 424-52.000.

Hartig, Wolfgang: *See—*
Schipper, Heinz; Hartig, Wolfgang; Weber, Klaus; Blumberg, Josef; and Wessolowski, Bernd, 4,332,129, Cl. 57-105.000.

Hasegawa, Chiichiro: *See—*
Hamada, Mitsuo; Yasuda, Sadami; and Hasegawa, Chiichiro, 4,332,844, Cl. 427-387.000.

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Hasegawa, Takashi; Miki, Minoru; and Taniguchi, Yutaka, to Takeda Chemical Industries, Ltd. Process for producing unsaturated polyester. 4,332,931, Cl. 528-297.000.

Hashimoto, Mitsuru: *See—*
Sakai, Kiyoshi; Hashimoto, Mitsuru; and Tsutsui, Kyoji, 4,332,948, Cl. 542-417.000.

Hashimoto, Yukio; Kimura, Kazuo; Hirata, Tadashi; Ogasa, Takehiro; Kobayashi, Shigeru; and Matsukuma, Ikuo, to Kyowa Hakko Kogyo Co., Ltd. Process for producing cephalosporin analogs. 4,332,896, Cl. 435-119.000.

Hashizume, Shinji: *See—*
Inoue, Kimio; Ogawa, Katsumi; Fukui, Tsugushi; Asai, Toshihiro; and Hashizume, Shinji, 4,332,481, Cl. 366-84.000.

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Hauri, Tobias, to Aktiengesellschaft Fr. Mettler's Sohne Maschinenfabrik. Thread winding machine. 4,332,065, Cl. 28-225.000.

Have, Serge: *See—*
Meunier, Jean P.; Barthe, Marie P.; Have, Serge; and Frumen, Bernard, 4,332,754, Cl. 264-45.500.

Hawkins, Richard E., to Champiain Cable Corporation. Coaxial cables. 4,332,976, Cl. 174-107.000.

Haws, Ronnie E.: *See—*
Adkins, David E.; Chin, Arthur H. T.; Haws, Ronnie E.; and Wittman, Robert H., 4,332,277, Cl. 138-89.000.

Hayashi, Nobuaki; Akagi, Motoo; Miura, Kiyoshi; and Odaka, Yoshiyuki, to Hitachi, Ltd. Photosensitive bis-azide composition with acrylic terpolymer and pattern-forming method. 4,332,874, Cl. 430-28.000.

Hayden, John E.; and Rutchik, Walter L., to Eaton Corporation. Minimum size, integral, A.C. overload current sensing, remote power controller. 4,333,122, Cl. 361-114.000.

Hayes, Richmond S., Jr., to Carrier Corporation. Heat exchange apparatus and method having two refrigeration circuits. 4,332,137, Cl. 62-81.000.

Hayman, Eric R., to Safeguard Business Systems, Inc. Pocket-size one-write checkbook. 4,332,400, Cl. 282-3.00A.

Haynes, John; and Huggins, Thomas B., Sr., to Westinghouse Electric Corp. Nuclear fuel pellet loading apparatus. 4,332,120, Cl. 53-245.000.

Heasley, James H.: *See—*
Searight, Charles E.; and Heasley, James H., 4,332,437, Cl. 350-103.000.

Hegarty, William P.: *See—*
Antonas, Ioannis A.; Allam, Rodney J.; and Hegarty, William P., 4,332,598, Cl. 62-17.000.

Heidemann, Gunter: *See—*
Ghyczy, Miklos; Erdos, Adorjan; Heidemann, Gunter; and Ritzmann, Gotz, 4,332,795, Cl. 424-199.000.

Heinicke, Harald, to Siemens Aktiengesellschaft. Pulse-controlled D-C converter with inductive load. 4,333,140, Cl. 363-27.000.

Heins, Ferdinand; and Speicher, Wolfgang, to Bayer Aktiengesellschaft. Aqueous polymer dispersions for the treatment of leather. 4,332,860, Cl. 428-473.000.

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Hengst, Bernd; Grosspietsch, Wolfgang; and Ognibeni, Karl-Heinz, to Fichtel & Sachs AG. Device for indicating the degree of exhaustion of an adsorption filter. 4,332,679, Cl. 210-90.000.

Henkel Corporation: *See—*
Lindner, Robert A., 4,332,702, Cl. 524-178.000.

Henne, Werner; Bandel, Werner; and Dunweg, Gustav, to Akzo N.V. Process for production of dialysis membrane hollow fiber chains. 4,332,752, Cl. 264-41.000.

Hennessy Industries, Inc.: *See—*
Stuart, Robert J., 4,332,169, Cl. 73-487.000.

Henning, James E.: *See—*
Hornbeck, Frederick C.; and Henning, James E., 4,332,853, Cl. 428-371.000.

Henoch, Bengt; and Berglind, Eilert, to Stiftelsen Institutet for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm. Apparatus for synchronized reception in connection with system for recording objects. 4,333,078, Cl. 343-6.5LC.

Hensel, Roy; Biller, Leonhard F.; and Danson, Russell J., to American Hoechst Corporation. Assembly for processing a photosensitive material. 4,332,454, Cl. 354-317.000.

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Hensley, George H.; and Hensley, Raymond E. Combustion initiation device. 4,333,126, Cl. 361-257.000.

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Hensley, George H.; and Hensley, Raymond E., 4,333,125, Cl. 361-257.000.
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Hentzschel, Hans; and Ludwig, Soni-Enrico, to Eurosil GmbH. Process for the three step-multiplex control of electro-optical display arrangements and circuit for effectuating the process. 4,333,098, Cl. 340-805.000.

Herbertz, Toni: *See—*
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,332,765, Cl. 264-206.000.

Herbstman, Sheldon; Biasotti, Joseph B.; and Brennan, Michael E., to Texaco Inc. Ether amine detergent and motor fuel composition containing same. 4,332,595, Cl. 44-72.000.

Hercules Incorporated: *See—*
Herty, Charles H., III; and McClendon, Samuel E., 4,332,631, Cl. 149-19.200.
Hughes, Norman E.; and Scheve, Bernard J., 4,332,873, Cl. 430-15.000.
Pleska, Jean-Pierre, 4,332,749, Cl. 264-13.000.

Herman, David E.: *See—*
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,332,593, Cl. 44-51.000.

Hermann Berstorff Maschinenbau GmbH: *See—*
Anders, Dietmar, 4,332,480, Cl. 366-77.000.
Anders, Dietmar, 4,332,541, Cl. 425-197.000.

Hermes Precisa International S.A.: *See—*
Tschudi, Giulio, 4,332,490, Cl. 400-175.000.

Hertrich, Klaus, to VEB Polygraph Leipzig Kombinat fuer Polygraphische Maschinen und Ausruestungen. Rotary folder with resettable release point. 4,332,582, Cl. 493-424.000.

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Hetzel, Fred W.: *See—*
Bicher, James I.; Sandhu, Taljit S.; and Hetzel, Fred W., 4,332,260, Cl. 128-804.000.

Heuscher, Dominic J.; and Carlson, Roland W., to Technicare Corporation. Method of high resolution partial area scan involving concentrated high density material outside the partial area. 4,333,145, Cl. 364-414.000.

Hewell, Gerald M., to Mead Corporation, The. Merchandising display stand. 4,332,204, Cl. 108-1.000.

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Larson, Leigh R., 4,332,215, Cl. 119-14.490.

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Kobari, Harukuni; Yamada, Yasuhiro; Suzuki, Susumu; and Hibino, Chitoshi, 4,333,160, Cl. 364-900.000.

Highlander, Sarah K.: *See—*
Manis, Jack J.; and Highlander, Sarah K., 4,332,900, Cl. 435-172.000.

Hiller, Heinrich: *See—*
Hoch, Helmut; Hahn, Erwin; and Hiller, Heinrich, 4,332,955, Cl. 549-56.000.

Hillermeider, Karlheinz: *See—*
Wegerhoff, Arno; Zengel, Hans; Brodowski, Walter; Beck, Heinz; Seeberger, Ernst; Steenken, Gerhard; and Hillermeider, Karlheinz, 4,332,600, Cl. 65-2.000.
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Hilshorst, Howard H. Pavement planing device. 4,332,422, Cl. 299-39.000.

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Terauchi, Kiyoshi; and Hiraga, Masaharu, 4,332,535, Cl. 418-55.000.

Hiramatsu, Michio, to Nippondenso Co., Ltd. Corrugated fin type heat exchanger. 4,332,293, Cl. 165-153.000.

Hirano, Shigeo: *See*—
Akimura, Yoshitaka; Hirano, Shigeo; Mifune, Hiroyuki; and Okutsu, Eiichi, 4,332,878, Cl. 430-264.000.

Hirano, Takazo: *See*—
Wakamori, Fumio; Funabashi, Motohisa; Kata, Mamoru; Hirano, Takazo; and Onari, Mikihiko, 4,332,507, Cl. 405-92.000.

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Hirayama, Hiroshi: *See*—
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.

Hirota, Tetsuya: *See*—
Ando, Masao; Hirota, Tetsuya; and Shioda, Katashi, 4,332,623, Cl. 127-46.200.

Hirsch, Steven B. Secure keyboard input terminal. 4,333,090, Cl. 340-365.0VL.

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Kimura, Hiroshi; Matsui, Toshikazu; Hisajima, Masahiko; Shigemura, Yutaka; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,332,467, Cl. 355-14.00D.

Hitachi, Ltd.: *See*—
Hayashi, Nobuaki; Akagi, Motoo; Miura, Kiyoshi; and Odaka, Yoshiyuki, 4,332,874, Cl. 430-28.000.
Kaku, Masaro; Ando, Kunio; Honda, Toyota; and Inoue, Fumio, 4,333,105, Cl. 358-67.000.
Noda, Masaru; and Murakami, Toshio, 4,333,111, Cl. 358-213.000.
Okamoto, Yukio; Mitani, Eisuke; Okabe, Tadao; and Sumioka, Atsushi, 4,333,040, Cl. 315-169.200.
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Yonezawa, Seiji; Sugiyama, Toshio; and Ojima, Masahiro, 4,333,173, Cl. 369-45.000.

Hlavac, Theodore E., Jr., beneficiary: *See*—
Chertock, Alan J., deceased; Fox, Jack N.; and Weissinger, Robert B., 4,332,640, Cl. 376-264.000.

Hobday, Robert W., to Allied Corporation. Non-evaporative process for the production of aluminum sulfate. 4,332,778, Cl. 423-132.000.

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Berthold, Rudiger; and Muller, Werner H., 4,332,941, Cl. 546-191.000.
Bicker, Richard; and Erckel, Rudiger, 4,332,943, Cl. 546-253.000.
Dalibor, Horst, 4,332,965, Cl. 560-169.000.
Gross, Jurgen, 4,332,471, Cl. 356-246.000.
Thamm, Horst-Dieter; Knittel, Volker; Sommer, Werner; and Weckler, Gerhard, 4,332,746, Cl. 260-932.000.
Trosken, Jurgen; Horlein, Gerhard; Schulze, Ernst-Friedrich; and Langeluddeke, Peter, 4,332,960, Cl. 560-62.000.

Hofer, Bernd: *See*—
Dietrich, Jurgen; Klotz, Hansjorg; and Hofer, Bernd, 4,332,349, Cl. 233-1.00R.

Hoffman, Lionel B., to Pitney Bowes Inc. Table top copy machine. 4,332,458, Cl. 355-3.0BE.

Hoffman, Norman E., to AMP Incorporated. DIP Switch. 4,332,987, Cl. 200-16.00D.

Hoffmann-La Roche Inc.: *See*—
Mlodozeniec, Arthur R., 4,332,789, Cl. 424-27.000.

Hoffmann, Werner: *See*—
Schoettle, Klaus; Kaemmer, Eduard; Dobler, Peter; Gliniorz, Lothar; and Hoffmann, Werner, 4,333,116, Cl. 360-78.000.

Hofgen, Gunter, to International Standard Electric Corporation. Monitoring system for scanning-beam microwave landing apparatus. 4,333,081, Cl. 343-108.00M.

Hohm, Ewald: *See*—
Gerlach, Klaus; Behnke, Joachim; Rosener, Wolfgang; and Hohm, Ewald, 4,332,686, Cl. 210-651.000.

Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, to Owens-Corning Fiberglas Corporation. Method for predrying pelletized material. 4,332,603, Cl. 65-27.000.

Hohnerlein, Otto G., Jr.; Smith, Willie E., Jr.; and Rimedio, Nicholas T., Sr., to Savannah Foods & Industries, Inc. Direct production of a pure sugar product from cane juice. 4,332,622, Cl. 127-41.000.

Holbrook, Winnon G.; and Kettenhofen, Adrian J., to American Can Company. Cup labeling method and apparatus. 4,332,635, Cl. 156-256.000.

Holdren, Richard D. Apparatus and method for producing highly nutritive storage stable forage plant material. 4,332,125, Cl. 56-1.000.

Holick, Hubert: *See*—
Jester, Alfred; Mueller, Elmar; and Holick, Hubert, 4,333,102, Cl. 357-81.000.

Holland, David: *See*—
Milner, David J.; and Holland, David, 4,332,962, Cl. 560-124.000.

Hollar, Arthur W., Jr.: *See*—
Griffin, Henry W.; and Hollar, Arthur W., Jr., 4,332,056, Cl. 16-341.000.

Holub, Fred F.; and Mellinger, Gary A., to General Electric Company. Copolymers of etherimides and amides. 4,332,929, Cl. 528-185.000.

Homcy, Charles J.; and Haber, Edgar, to Massachusetts General Hospital, The. Assay for beta-adrenergic antagonists and antibody therefor. 4,332,787, Cl. 424-1.000.

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Drum, Ian; Madenburg, Richard S.; Paulsrude, Douglas M.; Sherman, Carroll H.; Turpin, Frank G.; and Wheatcroft, Gerry A., 4,332,774, Cl. 422-111.000.

Homexx International Corp.: *See*—
Osborne, William E., 4,333,094, Cl. 340-566.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Iwai, Kazuhiro; and Enomoto, Hiroshi, 4,332,310, Cl. 188-218.00A.
Nomura, Toshio; and Kobayashi, Isao, 4,332,226, Cl. 123-494.000.

Honda, Tetsuzo: *See*—
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.

Honda, Toyota: *See*—
Kaku, Masaro; Ando, Kunio; Honda, Toyota; and Inoue, Fumio, 4,333,105, Cl. 358-67.000.

Honeywell Inc.: *See*—
Jaeger, Thomas S., 4,332,352, Cl. 236-1.00E.
Junio, David L., 4,333,115, Cl. 360-74.200.
Langlais, Richard A.; Ogawa, Francis T.; and Wilwerding, Dennis J., 4,333,007, Cl. 250-201.000.
Martin, Ronald L.; and Orrico, Mario M. V., 4,332,269, Cl. 137-84.000.
Mueller, Dale A.; Ruminsky, Robert T.; Serber, Stephen L.; and Wolfgram, Rodger C., 4,332,141, Cl. 62-140.000.

Honeywell Information Systems Inc.: *See*—
Page, Jay P.; and Mones, Arthur H., 4,332,624, Cl. 134-3.000.

Honma, Yasushi; Takeda, Mikio; and Tsuzurahara, Kei, to Tanabe Seiyaku Co., Ltd. Pyridinecarboxamide derivatives and process for the preparation thereof. 4,332,809, Cl. 424-266.000.

Hood, Oscar L.; and Lytton, Irvin V., to PPG Industries, Inc. Method for removing liquid residues from vessels by combustion. 4,332,626, Cl. 134-11.000.

Hood, Rush W., Jr., to Tektronix, Inc. Temperature-stabilized logarithmic converter. 4,333,023, Cl. 307-310.000.

Hoogovens Ijmuiden B.V.: *See*—
van Laar, Jacobus; Felthuis, Jacob; and Kastelic, Wilhelmus A. J., 4,332,554, Cl. 432-233.000.

Hooker Chemicals & Plastics Corp.: *See*—
Pouli, Dirk; Melnicki, Leo S.; and Rudd, Eric J., 4,332,662, Cl. 204-265.000.
Spore, Everette M., 4,332,648, Cl. 204-95.000.
Spore, Everette M., 4,332,659, Cl. 204-237.000.
Woodard, Stephen K., 4,332,647, Cl. 204-49.000.

Hoover, Merle V., to RCA Corporation. Differential-input complementary field-effect transistor amplifier. 4,333,057, Cl. 330-253.000.

Hoover, Merle V., to RCA Corporation. Operational amplifier employing complementary field-effect transistors. 4,333,058, Cl. 330-253.000.

Hoover Universal, Inc.: *See*—
Mizelle, Ned W., 4,332,417, Cl. 297-329.000.

Hope, Henry F.; and Hope, Stephen F. Mixing apparatus. 4,332,483, Cl. 366-132.000.

Hope, Stephen F.: *See*—
Hope, Henry F.; and Hope, Stephen F., 4,332,483, Cl. 366-132.000.

Hopfe, Harold H.: *See*—
Fulton, John L.; and Hopfe, Harold H., 4,332,543, Cl. 425-461.000.

Horeschi, Giancarlo: *See*—
Barozzi, Gian P.; and Horeschi, Giancarlo, 4,332,491, Cl. 400-208.000.

Horiba, Ltd.: *See*—
Ishida, Kozo; and Kira, Akimichi, 4,332,770, Cl. 422-78.000.

Horlein, Gerhard: *See*—
Trosken, Jurgen; Horlein, Gerhard; Schulze, Ernst-Friedrich; and Langeluddeke, Peter, 4,332,960, Cl. 560-62.000.

Hornbeck, Frederick C.; and Henning, James E., to International Business Machines Corporation; and Lundy Electronics & Systems, Inc. Conductive plastic with metalized glass fibers retained in partial clumps. 4,332,853, Cl. 428-371.000.

Horsfall, Harry, to David Brown Tractors, Ltd. Tractor power lift mechanisms. 4,332,285, Cl. 251-240.000.

Hosaka, Akihiko, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,332,863, Cl. 428-695.000.

Hosoi, Toshiaki. Grinding apparatus for a flank of an end mill point. 4,332,109, Cl. 51-127.000.

Hosokawa, Motoyuki: *See*—
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natuko; and Watanabe, Toshiyasu, 4,332,966, Cl. 560-206.000.

Hosomi, Fumio: *See*—
Kugimiya, Koichi; Hosomi, Fumio; Matsuo, Yoshihiro; and Nitta, Tsuneharu, 4,333,067, Cl. 338-34.000.

Hosomura, Hiroyoshi; Aota, Koichi; and Yoshimura, Eiji, to Rank Xerox Limited. Receptor sheet for electrophotography. 4,332,851, Cl. 428-325.000.

Hosono, Tsutomu, to Fuji Photo Optical Co., Ltd. Flash light discharge tube control device. 4,332,445, Cl. 354-106.000.

Hospital for Joint Disease Orthopaedic Institute: *See*—
Esformes, Ira; and Kummer, Frederick J., 4,332,037, Cl. 3-1.910.

Hotine, William. Sun powered automatic sun following reflector. 4,332,239, Cl. 126-425.000.
Houk, Leroy M., Jr. Assembly for filling and emptying a water bed. 4,332,044, Cl. 5-453.000.
House, Palmer A., to United States of America, Energy. Velocity pump reaction turbine. 4,332,520, Cl. 415-63.000.
Hovis, Victor M., Jr.; and Northcutt, Walter G., Jr., to United States of America, Energy. Method of fabricating thin-walled articles of tungsten-nickel-iron alloy. 4,332,617, Cl. 75-214.000.
Howard, Thomas B.; and Puissant, Gerald H., to American Can Company. Manufacture of rolls of fibrous web material. 4,332,324, Cl. 206-389.000.
Hoyt, Jack W., to United States of America, Navy. Flow noise suppression system for a sonar dome. 4,333,169, Cl. 367-1.000.
Hsu, Chao-Yang: *See*—
Lyons, James E.; and Hsu, Chao-Yang, 4,332,963, Cl. 560-131.000.
Hsu, Harry L., to Great Lakes Carbon Corporation. Carbon or graphite article and method of making by impregnating with a lignin sulfonate complex. 4,332,856, Cl. 428-408.000.
Hsu, Sheng T., to RCA Corporation. Method of making electrically programmable control gate injected floating gate solid state memory transistor. 4,332,077, Cl. 29-571.000.
Hsu, Yun T. Multipurpose air filling tent. 4,332,112, Cl. 52-2.000.
Hubbard Company: *See*—
Muse, Ralph F., 4,332,034, Cl. 2-237.000.
Hubele, Adolf: *See*—
Reinehr, Dieter; and Hubele, Adolf, 4,332,969, Cl. 564-460.000.
Huber, Paul G., to General Electric Company. Power supply for load controller. 4,333,138, Cl. 363-89.000.
Huffman, John, to Metal Bellows Corporation. Flexible tubing coupling. 4,332,404, Cl. 285-223.000.
Huggins, Thomas B., Sr.: *See*—
Haynes, John; and Huggins, Thomas B., Sr., 4,332,120, Cl. 53-245.000.
Hughes Aircraft Company: *See*—
Edwards, Colin W., 4,333,166, Cl. 365-182.000.
Pastor, Antonio C.; Pastor, Ricardo C.; Tangonan, Gregory L.; and Wong, Shi-Yin, 4,332,879, Cl. 430-272.000.
Hughes, Norman E.; and Scheve, Bernard J., to Hercules Incorporated. Multilayer printing plates and process for making same. 4,332,873, Cl. 430-15.000.
Hughes Undersea Coupling, Inc.: *See*—
Adkins, David E.; Chin, Arthur H. T.; Haws, Ronnie E.; and Wittman, Robert H., 4,332,277, Cl. 138-89.000.
Hujimoto, Yoshio; Kochi, Tadashi; and Furuya, Shigeru, to Toyo Kogyo Co., Ltd.; and Stanley Electric Co., Ltd. Headlight mounting and adjustment mechanism. 4,333,131, Cl. 362-372.000.
Hunter Douglas Internation, N.V.: *See*—
Frentzel, Kurt H.; and Oskam, Herman, 4,332,288, Cl. 160-176.00R.
Huppunen, Robert D.; and Morin, Theodore J., to Thermatool Corp. Solder pot with replenisher and skimmer. 4,332,373, Cl. 266-228.000.
Hurst, George H., Jr. Apparatus for signaling direction of travel on a road bed. 4,332,503, Cl. 404-11.000.
Hurwood, David L. Hygienic comfort product. 4,332,319, Cl. 206-210.000.
Huson, Andrew S.: *See*—
Gortz, Norman; Huson, Andrew S.; and MacIntyre, Robert M., 4,332,264, Cl. 134-57.00R.
Hutchins, Clinton E.: *See*—
Bemis, Richard A.; Hutchins, Clinton E.; Markland, Edward J.; and Arora, Mulk R., 4,332,651, Cl. 204-129.900.
Hutchinson, Eugene B.: *See*—
Van Auwelaer, James M.; Hutchinson, Eugene B.; and Braet, Jerome A., 4,332,126, Cl. 56-10.200.
Hyink, Darryl E. Cabinet with electrical apparatus for use in teaching. 4,332,568, Cl. 434-224.000.
Iacoviello, John G., to Air Products and Chemicals, Inc. Vinyl acetate-ethylene emulsions for nonwoven goods. 4,332,850, Cl. 428-288.000.
Ibaragi, Toshio: *See*—
Saitoh, Akira; Yamori, Akio; and Ibaragi, Toshio, 4,332,858, Cl. 428-412.000.
Ichii, Hirokazu, to Fuji Photo Film Co., Ltd. Release safety shutter interlock for battery powered camera. 4,332,451, Cl. 354-234.000.
Ichiyama, Toshio: *See*—
Mashiko, Koichiro; Ichiyama, Toshio; and Taniguchi, Makoto, 4,333,168, Cl. 365-210.000.
ICI Americas Inc.: *See*—
Yellin, Tobias O.; and Mant, Derrick M., 4,332,949, Cl. 548-128.000.
Ide, Yoshiaki, to Celanese Corporation. Process for extruding liquid crystal polymer. 4,332,759, Cl. 264-108.000.
Ideal Security Hardware Corporation: *See*—
Waldo, Russell W.; and Engstrom, George L., 4,332,407, Cl. 292-161.000.
Ident-A-Call, Inc.: *See*—
Thomas, Ralph H., 4,332,982, Cl. 179-7.10R.
Igarashi, Michiaki; Nakayama, Tetsuya; and Yamano, Shigemi, to Kabushiki Kaisha Komatsu Seisakusho. Control device for an earth-work machine. 4,332,517, Cl. 414-699.000.
Iida, Taketoshi; Saito, Kazuyoshi; Shrasaka, Toshio; and Takemura, Yasuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic diagnosis apparatus. 4,332,171, Cl. 73-626.000.
Illinois Tube Company: *See*—
Ellis, John T., 4,332,087, Cl. 33-137.00R.
Image Acoustics, Inc.: *See*—
Butler, John L., 4,332,986, Cl. 179-146.00E.
Imai, Eiji; and Omote, Kazuaki, to Nissan Motor Company, Ltd. Air intake housing. 4,332,187, Cl. 98-2.170.
Imhof, Ernst; and Schmid, Gunther, to Robert Bosch GmbH. Cooling system for, and method of cooling an internal combustion engine. 4,332,221, Cl. 123-41.080.
imka Forschungsgesellschaft fur Bienenzucht mbH: *See*—
Schmidt, Matthias, 4,332,045, Cl. 6-1.000.
Imperial Chemical Industries Limited: *See*—
Milner, David J.; and Holland, David, 4,332,962, Cl. 560-124.000.
Imperial Chemical Industries PLC: *See*—
Yellin, Tobias O.; and Mant, Derrick M., 4,332,949, Cl. 548-128.000.
Industrial Heat Engineering: *See*—
Ehrhardt, Henry S., 4,332,063, Cl. 26-3.000.
Industrie Pirelli Societa per Azioni: *See*—
Ferrentino, Antonio, 4,332,510, Cl. 405-171.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Bovio, Michele; Barbero, Aquilino; Gillone, Walter; and Berruti, Pierangelo, 4,332,487, Cl. 400-126.000.
Ingemann, Ole, to A/S Haustrup Plastic. Container and closure having frangible opening means. 4,332,332, Cl. 220-276.000.
Inmaru, Kiyokazu: *See*—
Morishita, Tsuyoshi; Yagii, Koji; Inmaru, Kiyokazu; and Miyake, Kenji, 4,332,616, Cl. 75-243.000.
Inoue, Fumio: *See*—
Kaku, Masaro; Ando, Kunio; Honda, Toyota; and Inoue, Fumio, 4,333,105, Cl. 358-67.000.
Inoue, Kimio; Ogawa, Katsumi; Fukui, Tsugushi; Asai, Toshihiro; and Hashizume, Shinji, to Kobe Steel, Ltd. Continuous mixing machine. 4,332,481, Cl. 366-84.000.
Institut de Recherches de la Siderurgie Francaise: *See*—
Pazdej, Richard, 4,332,777, Cl. 423-98.000.
Institut Straumann AG: *See*—
Sutter, Franz; and Straumann, Fritz, 4,332,036, Cl. 3-1.910.
International Business Machines Corporation: *See*—
Aldridge, Stephen F., 4,333,083, Cl. 346-1.100.
Cail, Norman; Daniels, Raymond A.; Eggerling, John B.; and Lammers, Gerald B., 4,332,461, Cl. 355-14.00R.
Dollenmayer, William L., 4,332,489, Cl. 400-172.000.
Hornbeck, Frederick C.; and Henning, James E., 4,332,853, Cl. 428-371.000.
Kellogg, Robert M.; and Kruger, Victor R., 4,332,351, Cl. 233-38.000.
Koopman, Nicholas G.; Marcotte, Vincent C.; and Teed, Stephen, 4,332,343, Cl. 228-231.000.
Schmitt, Alfred; and Schorer, Gerd, 4,332,627, Cl. 148-1.500.
Steury, Thomas D., 4,332,465, Cl. 355-14.00R.
International Flavors & Fragrances Inc.: *See*—
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,332,970, Cl. 568-319.000.
International Harvester Company: *See*—
Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,332,656, Cl. 204-159.140.
Staiert, Richard W.; and Krukow, Eugene J., 4,332,127, Cl. 56-10.200.
International Identification Incorporated: *See*—
Beigel, Michael, 4,333,072, Cl. 340-825.540.
International Minerals & Chemical Corp.: *See*—
Novacek, Edward P., 4,332,336, Cl. 222-269.000.
International Standard Electric Corporation: *See*—
Andre, Wolfram; and Muller, Hans, 4,333,037, Cl. 315-3.000.
Farrington, Jeffrey G., 4,333,178, Cl. 455-601.000.
Hofgen, Gunter, 4,333,081, Cl. 343-108.00M.
International Telephone and Telegraph Corporation: *See*—
Lawford, Victor N., 4,332,166, Cl. 73-299.000.
Pernyeszi, Joseph, 4,333,133, Cl. 363-15.000.
Inventive Technology International, Inc.: *See*—
McSpadden, John T., 4,332,561, Cl. 433-102.000.
IPCO Corporation: *See*—
Weissman, Bernard, 4,332,563, Cl. 433-215.000.
Irie, Yoichiro: *See*—
Kimura, Hiroshi; Matsui, Toshikazu; Hisajima, Masahiko; Shigemura, Yutaka; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,332,467, Cl. 355-14.00D.
Isella, Giuseppe, to Brevetti Motta s.a.s. Method and device for spacing continuously manufactured zip fasteners in which the connection elements are constituted by a monofilament of meander or spiral form. 4,332,072, Cl. 29-408.000.
Ishida, Hiroshi: *See*—
Kawada, Shigeki; and Ishida, Hiroshi, 4,333,042, Cl. 318-811.000.
Ishida, Kozo; and Kira, Akimichi, to Horiba, Ltd. Apparatus for analyzing the carbon content of metals. 4,332,770, Cl. 422-78.000.
Ishida, Masato: *See*—
Tamura, Yasuyuki; Nakahata, Kimio; and Ishida, Masato, 4,333,124, Cl. 361-214.000.
Ishihara Sangyo Kaisha, Ltd.: *See*—
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,332,961, Cl. 560-62.000.
Ishii, Takami; Takikawa, Naohisa; Tokunaga, Kiyoaki; and Ogawa, Nobuhiro, to UBE Industries, Ltd. Process for polymerizing formaldehyde. 4,332,930, Cl. 528-233.000.
Ishii, Takashi: *See*—
Yamaguchi, Hiroyasu; and Ishii, Takashi, 4,333,059, Cl. 330-265.000.
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natuko; and Watanabe, Toshiyasu, to Mitsubishi Gas Chemical Company,

Inc. Process for producing 3-pentenoic esters. 4,332,966, Cl. 560-206.000.
Ito, Akihiko: *See—*
Kato, Seiji; Ueno, Norio; Kakuishi, Mitsuo; Ito, Akihiko; and Iwata, Atsushi, 4,333,064, Cl. 333-173.000.
Ito, Hiromi: *See—*
Kato, Yutaka; Tokitoh, Hirohiko; Kitahara, Tomohiro; and Ito, Hiromi, 4,332,472, Cl. 356-344.000.
Ito, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust muffler. 4,332,307, Cl. 181-256.000.
Ito, Tetsuro; Oizumi, Toshiro; and Yamada, Shigeo, to Mitsubishi Denki Kabushiki Kaisha. Electrical discharge machine. 4,332,995, Cl. 219-69.00V.
Ito, Yoshinobu: *See—*
Siga, Tetsuo; Kinoshita, Shozo; Ito, Yoshinobu; and Akiyama, Minoru, 4,332,889, Cl. 430-583.000.
Itoh, Tadamasa: *See—*
Oi, Naobumi; Itoh, Tadamasa; and Yasumasa, Yoshiaki, 4,332,591, Cl. 23-230.0PC.
Itoki Co., Ltd.: *See—*
Takamatsu, Shunichi; and Maekawa, Kinshi, 4,333,005, Cl. 235-435.000.
ITR International Time Limited: *See—*
Witts, Alan G., 4,333,085, Cl. 346-76.0PH.
ITT Industries, Inc.: *See—*
Budecker, Ludwig, 4,332,270, Cl. 137-101.000.
Schopper, Bernd; and Tandler, Peter, 4,332,423, Cl. 303-22.00R.
Itzrodt, Gerd, to Andreas Stihl. Power tool, especially power saw. 4,332,220, Cl. 123-41.700.
Ivey, Curtis L., to Westinghouse Electric Corp. Process line progressive draw control system. 4,333,148, Cl. 364-469.000.
Iwai, Kazuhiro; and Enomoto, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Device for preventing intrusion of water, dust, etc. into drum brake. 4,332,310, Cl. 188-218.00A.
Iwaisako, Toshiyuki: *See—*
Hamanaka, Katsuhiko; Iwaisako, Toshiyuki; Masamoto, Junzo; and Yoshida, Koichi, 4,332,644, Cl. 203-46.000.
Iwata, Atsushi: *See—*
Kato, Seiji; Ueno, Norio; Kakuishi, Mitsuo; Ito, Akihiko; and Iwata, Atsushi, 4,333,064, Cl. 333-173.000.
Izu, Masatsugu; and Cannella, Vincent D., to Energy Conversion Devices, Inc. Imaging film with improved passivating layers. 4,332,880, Cl. 430-272.000.
Izumi, Zenji: *See—*
Kitanaka, Minoru; and Izumi, Zenji, 4,332,767, Cl. 264-322.000.
J. I. Case Company: *See—*
Baylor, John M., 4,332,425, Cl. 305-54.000.
Cochran, Gary L.; and Parquet, Donald J., 4,332,134, Cl. 60-464.000.
J. M. Voith GmbH: *See—*
Mauer, Eberhard; Fischer, Siegbert; and Pfalzer, Lothar, 4,332,638, Cl. 162-4.000.
Jacko, John; and Stack, William F., to United States Steel Corporation. Rope helix gage. 4,332,085, Cl. 33-143.00R.
Jackson, Raymond G.: *See—*
Davis, Paul C.; Jackson, Raymond G.; Sodomsky, Kenneth F.; and Whitson, Dennis L., 4,332,984, Cl. 179-81.00R.
Jacobi, Haireddin: *See—*
Etschenberg, Eugen; Jacobi, Haireddin; and Opitz, Wolfgang, 4,332,819, Cl. 424-301.000.
Jacoby, Benjamin: *See—*
Smith, Geoffrey F. W.; Stevens, Ralph A. J.; and Jacoby, Benjamin, 4,332,784, Cl. 424-1.000.
Jacquelin, Jean; and Pompon, Jean-Paul, to Societe Anonyme dite: Compagnie Generale D'Electricite. Method of temperature regulation. 4,332,866, Cl. 429-50.000.
Jaeger, Thomas S., to Honeywell Inc. Multistage thermostat using integral initiation change means. 4,332,352, Cl. 236-1.00E.
Jaeschke, Harold R.; Linder, Alan; and Boyle, Daniel J., to Champion International Corporation. Folder to hold coil of plastic tubing with clamp and fittings. 4,332,322, Cl. 206-364.000.
Jakobsen, Einar. Wave motors. 4,332,571, Cl. 440-9.000.
Jambry, Jean-Francois; and Milojevic, Dusica. Junction and connection terminal for the service of fixed or mobile premises in particular for the supply of a sanitary unit which may be itself attached to a caravan or a camping-car. 4,332,681, Cl. 210-170.000.
James, Aaron C.: *See—*
Matty, Thomas C.; and James, Aaron C., 4,333,150, Cl. 364-484.000.
James Dole Corporation: *See—*
Griffith, Gerald W., 4,332,450, Cl. 354-234.000.
Janome Sewing Machine Co., Ltd.: *See—*
Watasue, Toshiaki; and Makabe, Hachiro, 4,332,208, Cl. 112-277.000.
Janssen, Harvey W., to Wolff Manufacturing Co. Apparatus for resurfacing track links for crawler-type tractors. 4,332,996, Cl. 219-76.140.
Japan Atomic Energy Research Institute: *See—*
Makuuchi, Keizo; Katakai, Akio; Hagiwara, Miyuki; Yamamoto, Tsutomu; Nakayama, Hiroyuki; and Takagi, Tohru, 4,332,657, Cl. 204-159.220.
Japan Steel Works, Ltd., The: *See—*
Harada, Kunihiro; Kasai, Kiyoshi; Maki, Yoshiki; and Oda, Norimasa, 4,332,932, Cl. 528-481.000.
Japan Synthetic Rubber Co., Ltd.: *See—*
Harada, Kunihiro; Kasai, Kiyoshi; Maki, Yoshiki; and Oda, Norimasa, 4,332,932, Cl. 528-481.000.
Japax Inc.: *See—*
Shimizu, Akihiko, 4,333,000, Cl. 219-69.00W.
Jardin, Hans: *See—*
Lutz, Alfons; Schatzler, Walter; Jardin, Hans; Sielk, Werner; and Frank, Julius, 4,332,416, Cl. 296-216.000.
Jaton, Jean-Philippe, to Bobst, S.A. Device for delivering and packaging folded boxes received from a folder-gluer. 4,332,124, Cl. 53-540.000.
Jauregui Carro, Francisco-Javier. System for collecting products dumped on the surface of a mass of water. 4,332,682, Cl. 210-242.100.
Jayem Dialer Corp.: *See—*
Samuel, Richard I., 4,332,985, Cl. 179-90.0BD.
Jenkins, John P.; Rector, Stephen W.; McCarty, John J.; and Hammond, William, to Field Electronics Inc. Seed planter monitor. 4,333,096, Cl. 340-684.000.
Jensen, Thomas H., to PPG Industries, Inc. Fin cooler for glass fiber former. 4,332,602, Cl. 65-12.000.
Jesme, Philip O., to Smead Manufacturing Company, The. Applicator for normally viscous substances. 4,332,212, Cl. 118-202.000.
Jester, Alfred; Mueller, Elmar; and Holick, Hubert, to BBC Brown, Boveri & Company, Limited. High performance semiconductor component with heat dissipating discs connected by brushlike bundles of wires. 4,333,102, Cl. 357-81.000.
John D. Hollingsworth on Wheels, Inc.: *See—*
Warnock, William A., 4,332,058, Cl. 19-106.00R.
John Wyeth & Brother Limited: *See—*
Ward, Terence J., 4,332,822, Cl. 424-324.000.
Johnson, Allard R. Resaw apparatus. 4,332,180, Cl. 83-872.000.
Johnson, Bruce E., to Magnetic Peripherals Inc. Disc head arm position controller using digital velocity sensing. 4,333,117, Cl. 360-78.000.
Johnson, David M.: *See—*
deMonterey, Francis G.; Adhia, Bharat J.; and Johnson, David M., 4,332,354, Cl. 241-16.000.
Johnson, Dennis P.: *See—*
Margalit, Nehemiah; Joshi, Ashok V.; Aker, Wesley E.; and Johnson, Dennis P., 4,332,869, Cl. 429-194.000.
Johnson, Frederick P., to Simon Container Machinery Limited. Production of cases. 4,332,579, Cl. 493-325.000.
Johnson & Johnson: *See—*
Krainski, Theodore J., Jr., 4,332,175, Cl. 73-825.000.
Johnson, Keith, Jr.; Long, Robert A.; and Over, William R., to AMP Incorporated. Terminating apparatus for flat cable. 4,332,083, Cl. 29-749.000.
Johnson, Larry K., to Texas Instruments Incorporated. Keyboard apparatus and method for making same. 4,332,082, Cl. 29-622.000.
Johnson, Michael R.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,332,942, Cl. 546-240.000.
Johnston, John N., to Litton Business Systems, Inc. Calculator having a modular keyboard. 4,333,155, Cl. 364-708.000.
Jonell, Per-Olof. Method and a machine of obtaining samples from the ground to determine its composition. 4,332,301, Cl. 175-50.000.
Jones, Barry M.: *See—*
Paist, H. Palmer; and Jones, Barry M., 4,332,054, Cl. 16-197.000.
Joshi, Ashok V.: *See—*
Margalit, Nehemiah; Joshi, Ashok V.; Aker, Wesley E.; and Johnson, Dennis P., 4,332,869, Cl. 429-194.000.
Joslin, Joel A., to Sherwood Medical Industries, Inc. Filter and valve assembly for hypodermic syringe. 4,332,249, Cl. 128-218.0NV.
Joutsjoki, Jukka, to Oy Wartsila AB. Roll nip arrangement. 4,332,192, Cl. 100-168.000.
Jungblut, Camille: *See—*
Foy, Paul; Jungblut, Camille; and Deleens, Gerard, 4,332,920, Cl. 525-408.000.
Jungverdorben, Hermann-Josef: *See—*
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,332,765, Cl. 264-206.000.
Junio, David L., to Honeywell Inc. Tape transport control system. 4,333,115, Cl. 360-74.200.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Igarashi, Michiaki; Nakayama, Tetsuya; and Yamano, Shigemi, 4,332,517, Cl. 414-699.000.
Uchida, Kanich; and Sawamura, Hitoshi, 4,332,573, Cl. 474-94.000.
Kabushiki Kaisha Morita Seisakusho: *See—*
Furuichi, Shuhei, 4,333,012, Cl. 250-409.000.
Kabushiki Kaisha Tokyo Kikai Seisakusho: *See—*
Mizumura, Shizuo, 4,332,195, Cl. 101-349.000.
Kaemmer, Eduard: *See—*
Schoettle, Klaus; Kaemmer, Eduard; Dobler, Peter; Gliniorz, Lothar; and Hoffmann, Werner, 4,333,116, Cl. 360-78.000.
Kagerhuber, Franz: *See—*
Reithner, Gerhard; Wagner, Peter; and Kagerhuber, Franz, 4,332,289, Cl. 164-446.000.
Kahn, Marvin L.; and Eapen, Kuttikandathil E., to Rich Products Corporation. Intermediate-moisture frozen foods. 4,332,824, Cl. 426-330.300.
Kai, Junjiro: *See—*
Kimura, Hiroshi; and Kai, Junjiro, 4,332,690, Cl. 252-70.000.
Kaiho, Kenichi: *See—*
Nakahara, Yasushi; Ohtomo, Tadasuke; Yurugi, Masahiro; Naitoh, Takumi; and Kaiho, Kenichi, 4,332,516, Cl. 414-288.000.
Kajima Corporation: *See—*
Nakahara, Yasushi; Ohtomo, Tadasuke; Yurugi, Masahiro; Naitoh, Takumi; and Kaiho, Kenichi, 4,332,516, Cl. 414-288.000.
Kakino, Yoshiaki, to NL Circuit Design Block Co., Ltd. Acoustic detection of tool wear and fracture. 4,332,161, Cl. 73-104.000.

Kaku, Masaro; Ando, Kunio; Honda, Toyota; and Inoue, Fumio, to Hitachi, Ltd. Beam-indexing color television receiver. 4,333,105, Cl. 358-67.000.

Kakuishi, Mitsuo: *See*—
Kato, Seiji; Ueno, Norio; Kakuishi, Mitsuo; Ito, Akihiko; and Iwata, Atsushi, 4,333,064, Cl. 333-173.000.

Kalal, Jaroslav; and Tlustakova, Marie, to Ceskoslovenska akademie ved. Three-dimensional carrier of inorganic porous material-reactive polymer and a method for its preparation. 4,332,694, Cl. 252-189.000.

Kaler, George M., Jr.: *See*—
Hailey, Samuel I.; and Kaler, George M., Jr., 4,332,066, Cl. 29-26.00R.

Kalinowski, Richard, to Quadrivium Techniques Avancees. Method and apparatus for monitoring the reproduction of recorded information. 4,333,113, Cl. 360-27.000.

Kamogashira, Takashi; Nishida, Tsutomu; Sugawara, Michiharu; Nihno, Tomiyo; and Takegata, Setsuko, to Otsuka Pharmaceutical Co., Ltd. Process for the production of antibiotic Cephamycin C. 4,332,891, Cl. 435-48.000.

Kan, Peter T.: *See*—
Christman, Donald L.; and Kan, Peter T., 4,332,953, Cl. 548-307.000.

Kanaoka, Masaharu; Yanagi, Hideki; and Ogino, Shigeo, to Sumitomo Chemical Company, Ltd. Purification of human growth hormone. 4,332,717, Cl. 260-112.00R.

Kaneko, Takushi; Essery, John M.; Schmitz, Henry; and Doyle, Terrence W., to Bristol-Myers Company. Antitumor agents. 4,332,951, Cl. 548-218.000.

Kaneko, Takushi: *See*—
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,332,732, Cl. 549-332.000.

Kankaanpaa, Matti, to Valmet Oy. Calender. 4,332,191, Cl. 100-162.00R.

Kansai Paint Co., Ltd.: *See*—
Makuuchi, Keizo; Katakai, Akio; Hagiwara, Miyuki; Yamamoto, Tsutomu; Nakayama, Hiroyuki; and Takagi, Tohru, 4,332,657, Cl. 204-159.220.

Kant, Rajni, to Fairchild Camera & Instrument Corp. Method for forming a headless resistor utilizing selective diffusion and special contact formation. 4,332,070, Cl. 29-578.000.

Karam, Henry J., to Dow Chemical Company, The. Recirculating polymerization method and apparatus with evaporative cooling. 4,332,924, Cl. 526-64.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Mayer, Ingo, 4,332,149, Cl. 66-87.000.

Kasai, Kiyoshi: *See*—
Harada, Kunihiro; Kasai, Kiyoshi; Maki, Yoshiki; and Oda, Norimasa, 4,332,932, Cl. 528-481.000.

Kashio, Toshio, to Casio Computer, Co., Ltd. Electronic musical instrument with means for selecting tone clock numbers. 4,332,181, Cl. 84-1.010.

Kastelic, Wilhelmus A. J.: *See*—
van Laar, Jacobus; Felthuis, Jacob; and Kastelic, Wilhelmus A. J., 4,332,554, Cl. 432-233.000.

Kata, Mamoru: *See*—
Wakamori, Fumio; Funabashi, Motohisa; Kata, Mamoru; Hirano, Takazo; and Onari, Mikihiko, 4,332,507, Cl. 405-92.000.

Katacka, Nobuyuki: *See*—
Fukahori, Yoshihide; Katacka, Nobuyuki; and Anzai, Shiro, 4,332,918, Cl. 525-259.000.

Katakai, Akio: *See*—
Makuuchi, Keizo; Katakai, Akio; Hagiwara, Miyuki; Yamamoto, Tsutomu; Nakayama, Hiroyuki; and Takagi, Tohru, 4,332,657, Cl. 204-159.220.

Kato, Kenji; and Hagii, Hidehiko, to Nippon Oil and Fats Co., Ltd. Process for preparing peroxyesters. 4,332,740, Cl. 260-453.0RZ.

Kato, Seiji; Ueno, Norio; Kakuishi, Mitsuo; Ito, Akihiko; and Iwata, Atsushi, to Fujitsu Limited; and Nippon Telegraph & Telephone Public Corporation. Switched-capacitor filter. 4,333,064, Cl. 333-173.000.

Kato, Tutomu: *See*—
Mitsuyama, Akira; Kawano, Tadaaki; Kato, Tutomu; Deguchi, Masanobu; and Katoh, Ituro, 4,332,457, Cl. 355-3.0FU.

Kato, Yutaka; Tokitoh, Hirohiko; Kitahara, Tomohiro; and Ito, Hiromi, to Olympus Optical Company Ltd. Automatic cataphoresis apparatus. 4,332,472, Cl. 356-344.000.

Katoh, Ituro: *See*—
Mitsuyama, Akira; Kawano, Tadaaki; Kato, Tutomu; Deguchi, Masanobu; and Katoh, Ituro, 4,332,457, Cl. 355-3.0FU.

Kaufmann, Kenneth M., to Pako Corporation. Graphic arts processor having switch selectable replenishment control information matrices. 4,332,456, Cl. 354-298.000.

Kawada, Shigeki; and Ishida, Hiroshi, to Fujitsu Fanuc Limited. System for driving a motor by a pulse width modulation inverter. 4,333,042, Cl. 318-811.000.

Kawai, Hisasi; Egami, Tsuneyuki; Kohama, Tokio; and Obayashi, Hideki, to Nippon Soken, Inc. Gas flow measuring device. 4,332,165, Cl. 73-204.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph, 4,332,183, Cl. 84-1.260.

Kawai, Yuzuru: *See*—
Tsuda, Singo; Yamaga, Minoru; and Kawai, Yuzuru, 4,332,867, Cl. 429-94.000.

Kawamoto, Akira: *See*—
Nakagawa, Noboru; Oonishi, Toshiyuki; Tsutsumi, Masato; and Kawamoto, Akira, 4,332,138, Cl. 62-199.000.

Kawano, Tadaaki: *See*—
Mitsuyama, Akira; Kawano, Tadaaki; Kato, Tutomu; Deguchi, Masanobu; and Katoh, Ituro, 4,332,457, Cl. 355-3.0FU.

Kawarada, Hiroshi: *See*—
Ota, Isao; Shirazawa, Haruhiro; Tatsumichi, Toshio; Kawarada, Hiroshi; and Ohtsuka, Tetsuro, 4,332,075, Cl. 29-571.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Aoyama, Takahiko; and Nakaya, Akira, 4,332,574, Cl. 474-161.000.
Yoshida, Toshio; and Matsui, Shigetomo, 4,332,073, Cl. 29-421.00R.

Keegan, Patrick J.: *See*—
Schlesinger, Robert J.; and Keegan, Patrick J., 4,332,164, Cl. 73-193.00R.

Keiper Automobiltechnik GmbH & Co. KG: *See*—
Strowik, Willibald, 4,332,418, Cl. 297-362.000.

Kellogg, Robert M.; and Kruger, Victor R., to International Business Machines Corporation. Blood fraction extracting centrifuge. 4,332,351, Cl. 233-38.000.

Kelly, Charles A.; and Meneghini, Frank A., to Polaroid Corporation. Thiazolidine-substituted phenyl sulfonic acids. 4,332,950, Cl. 548-146.000.

Kelly, Darrell A.: *See*—
Blackmon, Lawrence E.; Dees, John R.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-Peir, 4,332,757, Cl. 264-103.000.

Kelly, Michael G.; and Pastien, Eugene R., to Conwed Corporation. Plastic netting for load unitization. 4,332,326, Cl. 206-497.000.

Kelsey, Paul G. Heat generator apparatus. 4,332,237, Cl. 126-247.000.

Kendall Company, The: *See*—
Schoots, Peter J., 4,332,253, Cl. 128-287.000.
Taylor, Rebecca S., 4,332,252, Cl. 128-275.000.

Kennecott Corporation: *See*—
Korklan, Harris J.; and Greany, John K., 4,332,852, Cl. 428-331.000.
Murata, Yorihiro, 4,332,755, Cl. 264-65.000.

Kennedy, Warren C.: *See*—
Scarton, Henry A.; and Kennedy, Warren C., 4,332,300, Cl. 173-104.000.

Kepple, Wilson E. Ski pole. 4,332,399, Cl. 280-819.000.

Kerbleski, Joseph J.: *See*—
Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., 4,332,947, Cl. 546-284.000.

Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung: *See*—
Burgkhardt, Bertram; Konig, Winfried; Piesch, Ernst; and Rober, Hans G., 4,333,013, Cl. 250-461.00R.

Kervennal, Jacques; Elleuch, Boubaker; and Taarit, Younes B., to Produits Chimiques Ugine Kuhlmann. Process for the manufacture of aromatic isocyanates. 4,332,739, Cl. 260-453.0PC.

Kettenhofen, Adrian J.: *See*—
Holbrook, Winnon G.; and Kettenhofen, Adrian J., 4,332,635, Cl. 156-256.000.

Keystone Camera Corporation: *See*—
Zawodny, Arthur, 4,332,448, Cl. 354-213.000.
Zawodny, Arthur; and Krysicki, Jerzy, 4,332,449, Cl. 354-214.000.

Kimberling, Delmer H. Apparatus for growing crystals. 4,332,773, Cl. 422-109.000.

Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, to Asahi Kasei Kogyo Kabushiki Kaisha. Fluorinated cation exchange membrane. 4,332,665, Cl. 204-296.000.

Kimura, Hiroshi; Matsui, Toshikazu; Hisajima, Masahiko; Shigemura, Yutaka; Irie, Yoichiro; and Morimoto, Kiyoshi, to Mita Industrial Co., Ltd. Developing device in electrostatic copying apparatus. 4,332,467, Cl. 355-14.00D.

Kimura, Hiroshi; and Kai, Junjiro, to Mitsubishi Denki Kabushiki Kaisha. Heat storage system comprising a phase change medium and a nucleating agent. 4,332,690, Cl. 252-70.000.

Kimura, Kazuo: *See*—
Hashimoto, Yukio; Kimura, Kazuo; Hirata, Tadashi; Ogasa, Takehiro; Kobayashi, Shigeru; and Matsukuma, Ikuo, 4,332,896, Cl. 435-119.000.

Kimura, Kouhei; Ohba, Hiroyasu; and Murai, Atsushi, to Toho Titanium Co., Ltd. Process for the preparation of catalyst component for the polymerization of α-olefins. 4,332,697, Cl. 252-429.00B.

King, John F.; and Bradshaw, Stephen L., to Magnesium Elektron Limited. Primary electric cell having magnesium alloy anode. 4,332,864, Cl. 429-3.000.

Kingsford, Ted I., to Plough, Inc. Adjustable cosmetic wiper. 4,332,494, Cl. 401-5.000.

Kinoshita, Shozo: *See*—
Siga, Tetsuo; Kinoshita, Shozo; Ito, Yoshinobu; and Akiyama, Minoru, 4,332,889, Cl. 430-583.000.

Kira, Akimichi: *See*—
Ishida, Kozo; and Kira, Akimichi, 4,332,770, Cl. 422-78.000.

Kira, Hiroshi; and Bauman, Verne W. Self-cancelling apparatus for vehicle turn indicators. 4,333,071, Cl. 340-56.000.

Kishel, Joseph F., to Sangamo Weston, Inc. Position transducer. 4,333,068, Cl. 338-158.000.

Kitagawa, Tohru: *See*—
Suzuki, Seiji; Sakamoto, Kohichiro; and Kitagawa, Tohru, 4,332,174, Cl. 73-862.650.

Kitahara, Tomohiro: *See*—
Kato, Yutaka; Tokitoh, Hirohiko; Kitahara, Tomohiro; and Ito, Hiromi, 4,332,472, Cl. 356-344.000.

Kitanaka, Minoru; and Izumi, Zenji, to Toray Industries, Inc. Method for producing thermoplastic resin molded articles. 4,332,767, Cl. 264-322.000.
Kitrell, John V. Manicure easel. 4,332,263, Cl. 132-73.000.
Kiwala, Jacob: *See—*
Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,332,970, Cl. 568-319.000.
Kiyohara, Takao: *See—*
Atsumi, Toshio; Takebayashi, Yoshiaki; and Kiyohara, Takao, 4,332,806, Cl. 424-273.00R.
Klawitter, Ronald R., to Steven Manufacturing Company. Roller skate. 4,332,394, Cl. 280-11.270.
Klein, George M.: *See—*
Alaimo, Robert J.; Gray, Joseph E.; and Klein, George M., 4,332,735, Cl. 549-496.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Garthe, Hellmut, 4,332,162, Cl. 73-117.300.
Kloeckner-Werke AG: *See—*
Bahre, Karl; Boer, Werner; Richter, Jorg; Seebacher, Gerald; and Warnke, Hans, 4,332,317, Cl. 198-734.000.
Klotz, Hansjorg: *See—*
Dietrich, Jurgen; Klotz, Hansjorg; and Hofer, Bernd, 4,332,349, Cl. 233-1.00R.
Kluger, Edward W.; and Welch, Calvin D., to Milliken Research Corporation. Polyaminopolyamides. 4,332,928, Cl. 528-113.000.
Knifton, John F., to Texaco Inc. Manufacture of alkanols from synthesis gas. 4,332,914, Cl. 518-700.000.
Knifton, John F.; and Lin, Jiang-Jen, to Texaco Inc. Production of alkanols from synthesis gas. 4,332,915, Cl. 518-700.000.
Knittel, Volker: *See—*
Thamm, Horst-Dieter; Knittel, Volker; Sommer, Werner; and Weckler, Gerhard, 4,332,746, Cl. 260-932.000.
Knoble, Herman W. Bow-string release device. 4,332,233, Cl. 124-35.00A.
Knudsen, Walter G., to Electrostatic Equipment Corp. Plenum mounted grid for electrostatic fluidized bed. 4,332,835, Cl. 427-32.000.
Kobari, Harukuni; Yamada, Yasuhiro; Suzuki, Susumu; and Hibino, Chitoshi, to Victor Company of Japan, Ltd. Memory control system. 4,333,160, Cl. 364-900.000.
Kobayashi, Akio; and Ogihara, Takeo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Multiply grafted antistatic resin composition. 4,332,919, Cl. 524-504.000.
Kobayashi, Isao: *See—*
Nomura, Toshio; and Kobayashi, Isao, 4,332,226, Cl. 123-494.000.
Kobayashi, Shigeru: *See—*
Hashimoto, Yukio; Kimura, Kazuo; Hirata, Tadashi; Ogasa, Takehiro; Kobayashi, Shigeru; and Matsukuma, Ikuo, 4,332,896, Cl. 435-119.000.
Kobayashi, Tsukasa: *See—*
Minemura, Norihiro; Toyao, Manabu; Kobayashi, Tsukasa; and Tashiro, Mikio, 4,332,585, Cl. 8-114.600.
Kobe, Inc.: *See—*
Erickson, John W., 4,332,521, Cl. 415-189.000.
Kobe Steel, Ltd.: *See—*
Inoue, Kimio; Ogawa, Katsumi; Fukui, Tsugushi; Asai, Toshihiro; and Hashizume, Shinji, 4,332,481, Cl. 366-84.000.
Kochi, Tadashi: *See—*
Hujimoto, Yoshio; Kochi, Tadashi; and Furuya, Shigeru, 4,333,131, Cl. 362-372.000.
Kocolowski, Mike. Automatic gear shift safety system. 4,332,305, Cl. 180-271.000.
Koelmel, Carl F.: *See—*
Lovas, Joseph R.; Lovas, Paul J.; and Koelmel, Carl F., 4,332,084, Cl. 30-380.000.
Kohama, Tokio: *See—*
Kawai, Hisasi; Egami, Tsuneyuki; Kohama, Tokio; and Obayashi, Hideki, 4,332,165, Cl. 73-204.000.
Kohl, John M.: *See—*
Stephenson, Edgar O.; Kohl, John M.; and Cunningham, Charles R., 4,332,401, Cl. 285-47.000.
Kohn, Gustave K.; and Baughn, Richard L., to Zoecon Corporation. Insect attractant. 4,332,792, Cl. 424-84.000.
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Kohner, Michael; and Kohner, Frank, 4,332,096, Cl. 40-486.000.
Kohner, Michael; and Kohner, Frank, to Michael Kohner Corp., The. Gravity flow display device. 4,332,096, Cl. 40-486.000.
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Ryu, Toshihiko; and Koizumi, Yutaka, 4,333,063, Cl. 333-18.000.
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Aoki, Kozo; Kojima, Tetsuro; Furutachi, Nobuo; and Sawada, Satoru, 4,332,886, Cl. 430-551.000.
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Kressner, Michael; Kolbe, Joachim; Bremer, Fritz; Pape, Georg; Wolf, Karlheinz; and Kummeler, Ferdinand, 4,332,587, Cl. 8-506.000.
Koller, Stefan: *See—*
Eugster, Peter; and Koller, Stefan, 4,332,588, Cl. 8-526.000.
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Kolm, Henry H.: *See—*
Kolm, Eric A.; and Kolm, Henry H., 4,333,029, Cl. 310-329.000.
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Nawata, Takanari; Komatsu, Toshio; and Kondoh, Yukio, 4,332,845, Cl. 428-35.000.
Komeno, Taichiro: *See—*
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,332,722, Cl. 260-245.400.
Koncelik, Joseph A., to Burlington Industries, Inc. Geriatric environmental systeming. 4,332,042, Cl. 5-424.000.
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Umezawa, Hamao; and Kondo, Shinichi, 4,332,794, Cl. 424-180.000.
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Nawata, Takanari; Komatsu, Toshio; and Kondoh, Yukio, 4,332,845, Cl. 428-35.000.
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Lario, Heikki; and Haimila, Matti, 4,332,353, Cl. 241-14.000.
Konig, Winfried: *See—*
Burgkhardt, Bertram; Konig, Winfried; Piesch, Ernst; and Rober, Hans G., 4,333,013, Cl. 250-461.00R.
Konno, Akira: *See—*
Miyawaki, Masaru; and Konno, Akira, 4,332,825, Cl. 426-330.500.
Konovalova, Nina P.: *See—*
Emanuel, Nikolai M.; Konovalova, Nina P.; Povarov, Leonard S.; Shapiro, Anatoly B.; Dyachkovskaya, Raisa F.; Suskina, Valentina I.; and Denisova, Ljudmila K., 4,332,934, Cl. 536-6.400.
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Reenstierna, Erik G. B., 4,332,323, Cl. 206-365.000.
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Korzun, John N., to E. R. Squibb & Sons, Inc. Purification of mercaptoacyl amino acids. 4,332,726, Cl. 548-533.000.
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Stemmler, Kurt; and Kosche, Hartmut, 4,332,583, Cl. 493-430.000.
Kosecoff, Irving W. Foldable bicycle carrier. 4,332,337, Cl. 224-42.03B.
Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Cyclic sulfoperfluoroaliphaticcarboxylic acid anhydrides. 4,332,954, Cl. 549-10.000.
Kosmanski, Thomas J., to General Motors Corporation. Vehicle vacuum supply system. 4,332,302, Cl. 180-54.00R.
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Kotowski, Thomas W., to General Motors Corporation. Transistor protection circuit. 4,333,120, Cl. 361-79.000.
Kozak, Norman M., to A. O. Smith Corporation. Multiple device control apparatus. 4,333,002, Cl. 219-321.000.
Krabbe, Wilfried, to Philipp Holzmann Aktiengesellschaft. Shield for tunneling and mining. 4,332,508, Cl. 405-144.000.
Krainski, Theodore J., Jr., to Johnson & Johnson. Counterbalance loading device. 4,332,175, Cl. 73-825.000.
Kramer, Petrus A., to Shell Oil Company. Dihalomethylenelactone pyrethroid intermediates. 4,332,730, Cl. 549-302.000.
Kramer, Stephen D.: *See—*
Swainson, Wyn K.; and Kramer, Stephen D., 4,333,165, Cl. 365-120.000.
Kreipe, Michael J.: *See—*
Cresap, Richard L.; Taylor, Carson W.; and Kreipe, Michael J., 4,333,021, Cl. 307-87.000.
Kremer, Victor, to Paul Wurth S.A. Profilometer mounting technique and apparatus. 4,332,374, Cl. 266-99.000.
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Kristoffersen, Bjorn R., to Boeing Company, The. Pressurized drain for toilet waste tank. 4,332,041, Cl. 4-316.000.
Kritzer, Richard W. Making heat exchangers. 4,332,069, Cl. 29-157.30A.
Kronman, Albert F., to 21st Century Envelope Co. Inc. Two-way envelope. 4,332,346, Cl. 229-73.000.
Kruger, Victor R.: *See—*
Kellogg, Robert M.; and Kruger, Victor R., 4,332,351, Cl. 233-38.000.
Krukow, Eugene J.: *See—*
Staiert, Richard W.; and Krukow, Eugene J., 4,332,127, Cl. 56-10.200.
Krysicki, Jerzy: *See—*
Zawodny, Arthur; and Krysicki, Jerzy, 4,332,449, Cl. 354-214.000.

Kubota, Atsushi: *See*—
Mochizuki, Noritaka; and Kubota, Atsushi, 4,333,130, Cl. 362-293.000.

Kudo, Takashi: *See*—
Mochida, Ei; Shinkai, Hiroyuki; Kudo, Takashi; and Sugawara, Toshiyuki, 4,332,788, Cl. 424-12.000.

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Kuhn, Eberhard: *See*—
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,332,882, Cl. 430-322.000.
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Kummeler, Ferdinand: *See*—
Kressner, Michael; Kolbe, Joachim; Bremer, Fritz; Pape, Georg; Wolf, Karlheinz; and Kummeler, Ferdinand, 4,332,587, Cl. 8-506.000.

Kummer, Frederick J.: *See*—
Esformes, Ira; and Kummer, Frederick J., 4,332,037, Cl. 3-1.910.

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Uji-Ie, Koji; Umehara, Masaakira; Taniguchi, Kiyoshi; and Kunikane, Makoto, 4,332,884, Cl. 430-338.000.

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Kooijmans, Petrus G.; Kunze, Wolfgang; and Noordam, Arend, 4,332,709, Cl. 523-416.000.

Kuo, Wey-Chaung: *See*—
Dungan, Dennis F.; and Kuo, Wey-Chaung, 4,332,988, Cl. 200-19.0DC.

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Kobayashi, Akio; and Ogihara, Takeo, 4,332,919, Cl. 524-504.000.

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Kurshan, Robert P.; and Malah, David, to Bell Telephone Laboratories, Incorporated. Broadband cyclotomic tone detector. 4,333,156, Cl. 364-724.000.

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Kuttelwesch, Rudolf, to Mewa Mechanische Weberei Altstadt GmbH. Method for extracting water from laundry. 4,332,047, Cl. 8-158.000.

Kuus, Felix; and Eckmann, Gerald C., to BJ-Hughes Inc. Valve assembly for an inflatable packer system. 4,332,298, Cl. 166-319.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Hashimoto, Yukio; Kimura, Kazuo; Hirata, Tadashi; Ogasa, Takehiro; Kobayashi, Shigeru; and Matsukuma, Ikuo, 4,332,896, Cl. 435-119.000.

Kyushu Hitachi Maxell, Ltd.: *See*—
Okuda, Tadanobu, 4,332,050, Cl. 15-246.000.

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Los, Mario A., 4,332,796, Cl. 424-229.000.

LaFuente, Henry. Ocular prosthesis which simulates change in pupil diameter. 4,332,039, Cl. 3-13.000.

LaHaye, Paul G.; Bjerklie, John W.; and Penty, Robert A., to Hague International. Composite ceramic heat exchange tube. 4,332,295, Cl. 165-178.000.

Lalikos, James M.; and Waite, Harold K., to Titeflex Corporation. Braided-wire sheathing having bundled strands twisted to equalize tension. 4,332,278, Cl. 138-127.000.

Lambert, Nicole: *See*—
Economopoulos, Marios; and Lambert, Nicole, 4,332,630, Cl. 148-12.00B.

Lambert, William S. Automatic flag system. 4,332,210, Cl. 116-173.000.

Lammers, Gerald B.: *See*—
Cail, Norman; Daniels, Raymond A.; Eggerling, John B.; and Lammers, Gerald B., 4,332,461, Cl. 355-14.00R.

LaMonte, Salvatore. Attachment tool for a vacuum cleaner hose. 4,332,051, Cl. 15-328.000.

Lange, Fritz W.: *See*—
Orth, Winfried; Lange, Fritz W.; and Fickert, Werner, 4,332,728, Cl. 548-519.000.

Langeluddeke, Peter: *See*—
Trosken, Jurgen; Horlein, Gerhard; Schulze, Ernst-Friedrich; and Langeluddeke, Peter, 4,332,960, Cl. 560-62.000.

Langer, Manfred: *See*—
Fischer, Wolfgang; Langer, Manfred; and Pohl, Gerhard, 4,332,935, Cl. 536-50.000.

Langlais, Richard A.; Ogawa, Francis T.; and Wilwerding, Dennis J., to Honeywell Inc. Method and apparatus for determining focus direction and amount. 4,333,007, Cl. 250-201.000.

Lario, Heikki; and Haimila, Matti, to Kone Osakeyhito. Procedure for mechanically raising the wood content in wood chips. 4,332,353, Cl. 241-14.000.

Larsen, Wallace L.; and Duncan, Eliot R., to Amana Refrigeration, Inc. Air flow system for combination microwave and convection oven. 4,332,992, Cl. 219-10.55R.

Larson, Clayton E., to White Metal Rolling & Stamping Corp. Safety stepladders. 4,332,308, Cl. 182-120.000.

Larson, Leigh R., to Hi-Life Rubber, Inc. Milking inflation. 4,332,215, Cl. 119-14.490.

Larson, Lynn D. Waterbed mattress. 4,332,043, Cl. 5-450.000.

Laster, Pat A. Pressurized air pumping apparatus. 4,332,530, Cl. 417-130.000.

Latsch, Reinhard; and Schlembach, Hans, to Robert Bosch GmbH. Internal combustion engine with a main combustion chamber and an ignition chamber. 4,332,224, Cl. 123-254.000.

Lauer, Gail D.: *See*—
Ptashne, Mark; Lauer, Gail D.; Roberts, Thomas M.; and Backman, Keith C., 4,332,892, Cl. 435-68.000.

Lawford, Victor N., to International Telephone and Telegraph Corporation. Temperature compensation apparatus for a liquid filled conduit. 4,332,166, Cl. 73-299.000.

Lawhon, James T.; and Manak, Larry J., to Texas A&M University. Method and apparatus for isolating protein from glandless cottonseed. 4,332,719, Cl. 260-123.500.

Lawrason, Robert E., Sr. Adjustable frame for supporting macrame. 4,332,405, Cl. 289-16.500.

Lear Siegler, Inc.: *See*—
Moldovan, Richard J.; and Davis, Harold D., 4,332,527, Cl. 417-15.000.

Le Can, Claude J. P. F.: *See*—
Whelan, Maurice V.; and Le Can, Claude J. P. F., 4,333,022, Cl. 307-304.000.

Lee, Gim F., Jr.: *See*—
Haaf, William R.; Lee, Gim F., Jr.; and Williams, Robert A., 4,332,714, Cl. 524-141.000.

Lee, Man S., to GTE Automatic Electric Laboratories, Inc. Switched-capacitor floating-inductor simulation circuit. 4,333,157, Cl. 364-802.000.

Lee, Maw H., to Scott & Fetzer Company, The. Power factor control of a three-phase induction motor. 4,333,046, Cl. 323-231.000.

Lee, Raymond: *See*—
Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,332,656, Cl. 204-159.140.

Lee, Shy-fuh, to Zoecon Corporation. Benzylidene glycine ester derivatives. 4,332,958, Cl. 560-35.000.

Lee, Yue-guey L., to General Electric Company. Modified polyamideimide resins. 4,332,925, Cl. 528-48.000.

Lehar, James J. Fuel device for a gasoline engine. 4,332,228, Cl. 123-557.000.

Lehmann, Hans, to Ciba-Geigy Corporation. Liquid or pasty thermosetting adhesive which can be pre-gelled and which is based on epoxide resin, and the use of this adhesive. 4,332,713, Cl. 156-328.000.

Leichnitz, Kurt, to Dragerwerk Aktiengesellschaft. Method and device for determining the alcohol content of a person's breathing. 4,332,771, Cl. 422-84.000.

Leininger, Steven, to Radio Shack. Keyboard and control system. 4,333,089, Cl. 340-365.00S.

Leippe, Michael M.: *See*—
Anderson, Richard J.; and Leippe, Michael M., 4,332,944, Cl. 546-272.000.

Lelental, Mark; and Sutton, Richard C., to Eastman Kodak Company. Polymeric electrically active conductive layer for electrically activatable recording element and process. 4,332,875, Cl. 430-45.000.

Leo Gottwald KG, Firma: *See*—
Otto, Gunter; and Eiler, Peter, 4,332,328, Cl. 212-180.000.

Leopold, Norbert, to Cloverline Inc., The. Telephone note clip. 4,332,362, Cl. 248-226.500.

Leslie Hartridge Limited: *See*—
Emerson, Reginald S., 4,332,163, Cl. 73-119.00A.

Lever Brothers Company: *See*—
Beavan, Stuart W., 4,332,691, Cl. 252-96.000.

Levinstein, Hyman J.; Murarka, Shyam P.; and Sinha, Ashok K., to Bell Telephone Laboratories, Incorporated. Method for making integrated semiconductor circuit structure with formation of Ti or Ta silicide. 4,332,839, Cl. 427-85.000.

Levy, David E.; Zwies, Alfred; and Duffy, Thomas E., to United States of America, Health and Human Services. Mask for the safe delivery of inhalation gases to small laboratory animals. 4,332,244, Cl. 128-205.250.

Lewis, John, Jr.: *See*—
Brassell, Gilbert W.; Lewis, John, Jr.; and Weber, Gary W., 4,332,751, Cl. 264-28.000.

Lewis, William R. Sealant applicator. 4,332,498, Cl. 401-188.00R.

Lichtenstein, Joseph: *See*—
Gordon, Marvin; and Lichtenstein, Joseph, 4,332,369, Cl. 251-114.000.

Lieder, Charles A.; and Deal, Carl H., to Shell Oil Company. Removal of hydrogen sulfide and carbonyl sulfide from gas-streams. 4,332,781, Cl. 423-573.00G.

Life-Like Products, Inc.: *See*—
Shulman, Leon, 4,332,103, Cl. 46-81.000.

Liggett Group Inc.: *See*—
Buemi, Dennis P., 4,332,823, Cl. 426-272.000.

Lijzenga, Jan; Van Gooswilligen, Gerrit; and Blanken, Thomas C., to Shell Oil Company. Plastic bituminous compositions. 4,332,703, Cl. 524-68.000.

Lin, Jiang-Jen: *See*—
Knifton, John F.; and Lin, Jiang-Jen, 4,332,915, Cl. 518-700.000.

Lin, Stephen Y., to American Can Company. Method for polymerization of lignosulfonates. 4,332,589, Cl. 8-557.000.
Linde Aktiengesellschaft: *See*—
Ranke, Gerhard; and Siegert, Friedrich, 4,332,596, Cl. 55-18.000.
Linder, Alan: *See*—
Jaeschke, Harold R.; Linder, Alan; and Boyle, Daniel J., 4,332,322, Cl. 206-364.000.
Lindner, Robert A., to Henkel Corporation. Polyvinyl chloride compositions and processing. 4,332,702, Cl. 524-178.000.
Linsey, Mark, to American Hospital Supply Corporation. Puncture spike handle. 4,332,333, Cl. 222-83.000.
Linton, Robert; Asbury, Frank; and Artale, Richard, to Avon Products, Inc. Candle safety disc and candle. 4,332,548, Cl. 431-289.000.
Liska, Georg, to Zahnradfabrik Friedrichshafen, AG. Piston pump, especially radial piston pump. 4,332,532, Cl. 417-273.000.
Litchield, Peter J.; and Taylor, John K., to TBA Industrial Products Limited. Production of belting. 4,332,842, Cl. 427-176.000.
Litton Business Systems, Inc.: *See*—
Johnston, John N., 4,333,155, Cl. 364-708.000.
Liu, Anh-Thu: *See*—
Scherzer, Julius; and Liu, Anh-Thu, 4,332,782, Cl. 423-628.000.
LKB-Produkter AB: *See*—
Taylor, Robert L., 4,332,906, Cl. 435-291.000.
Lobo, Brian J.: *See*—
Watson, James W., Jr.; Silvon, Michael P.; and Lobo, Brian J., 4,332,747, Cl. 260-986.000.
Lockwood, Alan C., to Norris Industries, Inc. Electrical cut-in box. 4,332,330, Cl. 220-3.500.
Loctite Corporation: *See*—
Marino, Frank C., 4,332,213, Cl. 118-211.000.
Lohman, Charles A.: *See*—
Mathews, Lemuel P.; Lohman, Charles A.; and Armstrong, Paul R., 4,333,170, Cl. 367-125.000.
Long, Robert A.: *See*—
Johnson, Keith, Jr.; Long, Robert A.; and Over, William R., 4,332,083, Cl. 29-749.000.
Looschen, Floyd W., to Burroughs Corporation. Data extraction means for use in a data transmission system. 4,333,176, Cl. 370-84.000.
Lord, Raymond E. Prefabricated modular crown system. 4,332,564, Cl. 433-218.000.
Los, Mario A., to Laboratorios Bago S.A. Potentiated sulfonamide injectable preparation. 4,332,796, Cl. 424-229.000.
Lovas, Joseph R.; Lovas, Paul J.; and Koelmel, Carl F., to Cyloflex, Inc. Portable board mill. 4,332,084, Cl. 30-380.000.
Lovas, Paul J.: *See*—
Lovas, Joseph R.; Lovas, Paul J.; and Koelmel, Carl F., 4,332,084, Cl. 30-380.000.
Lowe, Gunter, to Lowe, Gunter. Method of measuring firing misses and firing miss-measuring installation for the performance of the method. 4,333,106, Cl. 358-107.000.
Lowe, Philip J.: *See*—
Buckley, Keith; Burrows, Ian E.; and Lowe, Philip J., 4,332,832, Cl. 426-641.000.
Loyd, Comer C., Jr.; and Benner, James D., to Loyd, Comer C., Jr. Electronic bingo game. 4,332,389, Cl. 273-237.000.
Lozier, Leroy P. Dynamic action high power slingshot. 4,332,230, Cl. 124-20.80R.
Lubbers, Dietrich W.; and Hannebauer, Friedbert, to Max Planck Gesellschaft zur Forderung der Wissenschaften e.V. Method of producing a light conductor. 4,332,439, Cl. 350-320.000.
Lucas Industries Limited: *See*—
Green, Stanley, 4,332,438, Cl. 350-167.000.
Walker, Michael J., 4,333,054, Cl. 324-380.000.
Ludwig, Soni-Enrico: *See*—
Hentzschel, Hans; and Ludwig, Soni-Enrico, 4,333,098, Cl. 340-805.000.
Luedemann, Heinz; and Schneider, Klaus, to AFGA-Gevaert AG. Web-advancing apparatus. 4,332,339, Cl. 226-195.000.
Lundquist, Ingemar, to Advanced Catheter Systems, Inc. System for filling and inflating and deflating a vascular dilating cathether assembly. 4,332,254, Cl. 128-344.000.
Lundy Electronics & Systems, Inc.: *See*—
Hornbeck, Frederick C.; and Henning, James E., 4,332,853, Cl. 428-371.000.
Lunk, Hans E.: *See*—
Zingheim, Steven C.; and Lunk, Hans E., 4,332,855, Cl. 428-379.000.
Lustig, Leopold P. Dental scaling apparatus. 4,332,558, Cl. 433-86.000.
Lutz, Alfons; Schatzler, Walter; Jardin, Hans; Sielk, Werner; and Frank, Julius, to Webasto-Werk W. Baier GmbH & Co. Vehicle roof. 4,332,416, Cl. 296-216.000.
Luursema, Meerten: *See*—
Alkema, Frederik H.; and Luursema, Meerten, 4,333,127, Cl. 362-17.000.
Luwa AG: *See*—
Gasser, Hermann; di Benedetto, Paolo; and Ferri, Johann W., 4,332,130, Cl. 57-279.000.
Lynch, Charles E., to Du Pont de Nemours, E. I., and Company. Process for preparing a spreadable acrylic fiber tow. 4,332,762, Cl. 264-168.000.
Lynch Communication Systems, Inc.: *See*—
Cook, R. Gordon; and Townsend, Todd V., 4,333,175, Cl. 370-56.000.
Lyons, James E.; and Hsu, Chao-Yang, to Sun Tech, Inc. Selective production of phenylene diacetate. 4,332,963, Cl. 560-131.000.
Lyons, Sanford D. Exercising device. 4,332,381, Cl. 272-144.000.
Lytton, Irvin V.: *See*—
Hood, Oscar L.; and Lytton, Irvin V., 4,332,626, Cl. 134-11.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Braun, Rolf, 4,332,196, Cl. 101-365.000.
Gensheimer, Valentin, 4,332,194, Cl. 101-216.000.
Macchi, Massimo, to Officine Savio S.p.A. Piecing machine for non-fabric ribbons. 4,332,580, Cl. 493-346.000.
MacDonald, James D., Jr. Thrust augmenter ejector combustion device. 4,332,547, Cl. 431-242.000.
MacFall, Douglas S., Jr.: *See*—
Collins, John D.; MacFall, Douglas S., Jr.; and Sciarretta, William A., 4,333,080, Cl. 343-17.2PC.
Machida Endoscope Co., Ltd.: *See*—
Chikama, Toshio, 4,332,242, Cl. 128-3.000.
Machine Design Incorporated: *See*—
Quantz, James B., 4,332,827, Cl. 426-481.000.
Maciaszek, Joseph A.: *See*—
Slovinsky, Manuel; and Maciaszek, Joseph A., 4,332,696, Cl. 252-321.000.
MacIntyre, Robert M.: *See*—
Gortz, Norman; Huson, Andrew S.; and MacIntyre, Robert M., 4,332,264, Cl. 134-57.00R.
MacManus, Daniel C., to General Motors Corporation. Fan type mass airflow meter. 4,332,173, Cl. 73-861.890.
Maddak, Inc.: *See*—
Milden, Morton; and Falzarano, Anthony V., 4,332,383, Cl. 273-64.000.
Madenburg, Richard S.: *See*—
Drum, Ian; Madenburg, Richard S.; Paulsrude, Douglas M.; Sherman, Carroll H.; Turpin, Frank G.; and Wheatcroft, Gerry A., 4,332,774, Cl. 422-111.000.
Madsen, Kristian D., to ASEA Aktiebolag. Gas-cooled rotor for turbogenerator. 4,333,027, Cl. 310-61.000.
Maeder, Heinz B., to Motorola, Inc. MOS Latch circuit. 4,333,020, Cl. 307-279.000.
Maekawa, Kinshi: *See*—
Takamatsu, Shunichi; and Maekawa, Kinshi, 4,333,005, Cl. 235-435.000.
Magnavox Consumer Electronics Co., The: *See*—
Streeter, Robert D., 4,332,978, Cl. 179-1.0GS.
Magnesium Elektron Limited: *See*—
King, John F.; and Bradshaw, Stephen L., 4,332,864, Cl. 429-3.000.
Magnetic Peripherals Inc.: *See*—
Johnson, Bruce E., 4,333,117, Cl. 360-78.000.
Makabe, Hachiro: *See*—
Watasue, Toshiaki; and Makabe, Hachiro, 4,332,208, Cl. 112-277.000.
Makhmudov, Takhir M.: *See*—
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Maki, Emil R.; and Freudenstein, Ferdinand, to General Motors Corporation. Cyclic phase-change coupling. 4,332,148, Cl. 464-102.000.
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Makuuchi, Keizo; Katakai, Akio; Hagiwara, Miyuki; Yamamoto, Tsutomu; Nakayama, Hiroyuki; and Takagi, Tohru, to Kansai Paint Co., Ltd.; and Japan Atomic Energy Research Institute. Emulsion composition for use in baking paint. 4,332,657, Cl. 204-159.220.
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Kurshan, Robert P.; and Malah, David, 4,333,156, Cl. 364-724.000.
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Belval, Michel; Casselman, Chantal; Malet, Jean-Claude; Prats, Christian; and Meneret, Jean, 4,332,170, Cl. 73-40.50R.
Maltby, Frederick L.: *See*—
Sun, Robert J.; and Maltby, Frederick L., 4,332,167, Cl. 73-304.00C.
Manak, Larry J.: *See*—
Lawhon, James T.; and Manak, Larry J., 4,332,719, Cl. 260-123.500.
Manders, Petrus G. J., to Ruti-Te Strake B.V. Air supply system for a pneumatic loom. 4,332,280, Cl. 139-435.000.
Manis, Jack J.; and Highlander, Sarah K., to Upjohn Company, The. Construction of co-integrate plasmids from plasmids of Streptomyces and Escherichia. 4,332,900, Cl. 435-172.000.
Manizza, Guelfo A., to Federal Paper Board Company, Inc. Bottle package with promotional card insert. 4,332,325, Cl. 206-216.000.
Mano, Hiroshi, to Sumitomo Electric Industries, Ltd. Porous structure of polytetrafluoroethylene and process for production thereof. 4,332,035, Cl. 3-1.400.
Manos, Philip, to Du Pont de Nemours, E. I., and Company. Acid reaction products of polymeric amines. 4,332,737, Cl. 260-404.500.
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Yellin, Tobias O.; and Mant, Derrick M., 4,332,949, Cl. 548-128.000.
Marconi, Walter: *See*—
Olivieri, Roberto; Eletti Bianchi, Giancarlo; Fascetti, Eugenio; Centini, Felice; Degen, Ludwig; and Marconi, Walter, 4,332,905, Cl. 435-280.000.
Marcotte, Vincent C.: *See*—
Koopman, Nicholas G.; Marcotte, Vincent C.; and Teed, Stephen, 4,332,343, Cl. 228-231.000.
Margalit, Nehemiah; Joshi, Ashok V.; Aker, Wesley E.; and Johnson, Dennis P., to Ray-O-Vac Corporation. Metal-rich iron sulfide cathode material. 4,332,869, Cl. 429-194.000.

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United States of America, National Aeronautics and Space Administration; and Margolis, Jack S., 4,332,441, Cl. 350-358.000.
Marietta, Walter E., to Parker-Hannifin Corporation. Variable displacement pump with torque limiting control. 4,332,531, Cl. 417-218.000.
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Marino, Frank C., to Loctite Corporation. Workpiece coating apparatus. 4,332,213, Cl. 118-211.000.
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Bemis, Richard A.; Hutchins, Clinton E.; Markland, Edward J.; and Arora, Mulk R., 4,332,651, Cl. 204-129.900.
Markley, Lowell D., to Dow Chemical Company, The. Substituted benzonitriles having antiviral activity. 4,332,820, Cl. 424-304.000.
Marley Tile A.G.: *See*—
Quinnell, Geoffrey C., 4,332,117, Cl. 52-94.000.
Mars Limited: *See*—
Buckley, Keith; Burrows, Ian E.; and Lowe, Philip J., 4,332,832, Cl. 426-641.000.
Marshall Air Systems, Inc.: *See*—
Stuck, Robert M., 4,332,189, Cl. 99-339.000.
Mart, Clyde D., to First National Supermarkets, Inc. Spiral meat slicer. 4,332,190, Cl. 99-538.000.
Martin, Ronald L.; and Orrico, Mario M. V., to Honeywell Inc. Sloped nozzle pneumatic device. 4,332,269, Cl. 137-84.000.
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Schonafinger, Karl; Beyerle, Rudi; Nitz, Rolf-Eberhard; Martorana, Piero A.; and Fiedler, Volker, 4,332,801, Cl. 424-246.000.
Maruyama, Teruo, to Matsushita Electric Industrial Co., Ltd. Rotary mechanism with axial bearings. 4,332,428, Cl. 308-10.000.
Marzocchi, Alfred; Roberts, Michael G.; Bolen, Charles E.; and Harrington, Edward R., to Owens-Corning Fiberglas Corporation. Modified asphalt compositions. 4,332,704, Cl. 523-203.000.
Masamoto, Junzo: *See*—
Hamanaka, Katsuhiko; Iwaisako, Toshiyuki; Masamoto, Junzo; and Yoshida, Koichi, 4,332,644, Cl. 203-46.000.
Mashiko, Koichiro; Ichiyama, Toshio; and Taniguchi, Makoto, to Mitsubishi Denki Kabushiki Kaisha. Memory circuit. 4,333,168, Cl. 365-210.000.
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Homcy, Charles J.; and Haber, Edgar, 4,332,787, Cl. 424-1.000.
Massachusetts Institute of Technology: *See*—
Cooney, Charles L.; and Schaefer, Eugene J., 4,332,899, Cl. 435-172.000.
Master Specialties Co.: *See*—
Stevens, Curtis R., 4,332,990, Cl. 200-314.000.
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Yagasaki, Toshiaki; Masuda, Shunichi; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,332,462, Cl. 355-14.00R.
Mathews, Lemuel P.; Lohman, Charles A.; and Armstrong, Paul R., to Northrop Corporation. Acoustical detection and tracking system. 4,333,170, Cl. 367-125.000.
Matsuda, Masakazu: *See*—
Orikabe, Yasuo; and Matsuda, Masakazu, 4,333,164, Cl. 365-104.000.
Matsui, Norio, to Shinpo Kogyo Kabushiki Kaisha. Electrically driven potter's wheel. 4,332,542, Cl. 425-459.000.
Matsui, Shigetomo: *See*—
Yoshida, Toshio; and Matsui, Shigetomo, 4,332,073, Cl. 29-421.00R.
Matsui, Toshikazu: *See*—
Kimura, Hiroshi; Matsui, Toshikazu; Hisajima, Masahiko; Shigemura, Yutaka; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,332,467, Cl. 355-14.00D.
Matsukuma, Ikuo: *See*—
Hashimoto, Yukio; Kimura, Kazuo; Hirata, Tadashi; Ogasa, Takehiro; Kobayashi, Shigeru; and Matsukuma, Ikuo, 4,332,896, Cl. 435-119.000.
Matsumoto, Kazuya, to Canon Kabushiki Kaisha. Image scanning apparatus and method. 4,333,112, Cl. 358-298.000.
Matsumura, Akira: *See*—
Shibahara, Jun; and Matsumura, Akira, 4,332,993, Cl. 219-10.55R.
Matsuo, Yoshihiro: *See*—
Kugimiya, Koichi; Hosomi, Fumio; Matsuo, Yoshihiro; and Nitta, Tsuneharu, 4,333,067, Cl. 338-34.000.
Matsushima, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for protecting an electric power system and digital protective system. 4,333,151, Cl. 364-492.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kugimiya, Koichi; Hosomi, Fumio; Matsuo, Yoshihiro; and Nitta, Tsuneharu, 4,333,067, Cl. 338-34.000.
Maruyama, Teruo, 4,332,428, Cl. 308-10.000.
Ota, Isao; Shirazawa, Haruhiro; Tatsumichi, Toshio; Kawarada, Hiroshi; and Ohtsuka, Tetsuro, 4,332,075, Cl. 29-571.000.
Sotomura, Tadashi; Sekido, Satoshi; Morigaki, Ken'Ichi; Okazaki, Ryoji; and Nakai, Muneaki, 4,332,865, Cl. 429-48.000.
Tsuda, Singo; Yamaga, Minoru; and Kawai, Yuzuru, 4,332,867, Cl. 429-94.000.
Uwano, Tomoki, 4,333,062, Cl. 331-99.000.
Matty, Thomas C.; and James, Aaron C., to Westinghouse Electric Corp. Signal receiving apparatus and method. 4,333,150, Cl. 364-484.000.
Mauer, Eberhard; Fischer, Siegbert; and Pfalzer, Lothar, to J. M. Voith GmbH. Method and apparatus for the recovery of a suspension of fibrous material from mixed waste paper. 4,332,638, Cl. 162-4.000.
Mauldin, Herbert N. Paver attachment. 4,332,505, Cl. 404-108.000.
Mauleon, Jean-Louis: *See*—
Dean, Robert R.; Mauleon, Jean-Louis; and Pfeiffer, Robert W, 4,332,674, Cl. 208-120.000.
Maurer, Fritz; Riebel, Hans-Jochem; and Priesnitz, Uwe, to Bayer Aktiengesellschaft. Preparation of 2-cyano-3,3-dimethyl-cyclopropane-1-carboxylic acid esters and intermediates therefor. 4,332,745, Cl. 260-464.000.
Maussion, Daniel, to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme). Method and apparatus for processing an analog signal. 4,333,024, Cl. 307-351.000.
Max Planck Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Lubbers, Dietrich W.; and Hannebauer, Friedbert, 4,332,439, Cl. 350-320.000.
Maxemchuk, Nicholas F.: *See*—
Buric, Milorad R.; and Maxemchuk, Nicholas F., 4,333,097, Cl. 340-711.000.
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Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; and Maximovich, Boleslav I., 4,332,997, Cl. 219-9.500.
Mayer, Ingo, to Karl Mayer Textilmaschinenfabrik GmbH. Needle bar adjustment mechanism for warp knitting machines. 4,332,149, Cl. 66-87.000.
Mayol, Robert F.; and Gammans, Richard E., to Mead Johnson & Company. Benzanilide derivative. 4,332,803, Cl. 424-267.000.
Mazeski, Conrad A.; and Candelaria. Ken. Monitoring attention and cognition and the effect of sensory motor, nutritional, and other biochemical factors thereon. 4,332,566, Cl. 434-178.000.
Mazumder, Mono M.: *See*—
Foh, Stephen E.; Mazumder, Mono M.; and Pangborn, Jon B., 4,332,650, Cl. 204-104.000.
McAlexander, W. D.: *See*—
Parks, Alvin L.; and McAlexander, W. D., 4,332,299, Cl. 172-98.000.
McCartney, John, to Norwood Industries, Inc. Thermal coagulation of polyurethane dispersions. 4,332,710, Cl. 524-591.000.
McCarty, John J.: *See*—
Jenkins, John P.; Rector, Stephen W.; McCarty, John J.; and Hammond, William, 4,333,096, Cl. 340-684.000.
McCaslin, Robert E. Game with moveable maze on game board. 4,332,385, Cl. 273-113.000.
McClellan, Jack A. Centrifuge apparatus for separating entrained solids from industrial waste water. 4,332,350, Cl. 233-7.000.
McClellan, Thomas A. Bag holder support system. 4,332,361, Cl. 248-95.000.
McClendon, Samuel E.: *See*—
Herty, Charles H., III; and McClendon, Samuel E., 4,332,631, Cl. 149-19.200.
McConaghy, James R.; and Anderson, Ardis L., to Conoco, Inc. Process for producing calcined coke and rich synthesis gas. 4,332,641, Cl. 201-17.000.
McCord Corporation: *See*—
Melnyk, William, 4,332,068, Cl. 29-157.30R.
McCorkle, Charles E., Jr. Intravenous channel cardiac electrode and lead assembly and method. 4,332,259, Cl. 128-786.000.
McDonnell Douglas Corporation: *See*—
Boehringer, Wilfred E., 4,332,392, Cl. 277-27.000.
McElroy, David J., to Texas Instruments Incorporated. Dynamic memory with on-chip refresh invisible to CPU. 4,333,167, Cl. 365-222.000.
McGarry, Phillip E.: *See*—
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,332,593, Cl. 44-51.000.
McGuire, Kenyon E.; and Brokl, Stanley S., to RCA Corporation. Jam-resistant TV system. 4,333,107, Cl. 358-120.000.
McKenzie, Joe A.: *See*—
Dick, John O.; McKenzie, Joe A.; and Bradford, William C., 4,333,079, Cl. 343-7.0PF.
McLeod, John, to Ferranti Limited. Method of bonding an optical element to a support. 4,332,636, Cl. 156-289.000.
McNally, Frank X., to National Mine Service Company. Portable gas detector. 4,332,772, Cl. 422-97.000.
McPherson, Allan B.: *See*—
Arora, Mulk R.; Paquette, Edward J.; and McPherson, Allan B., 4,332,652, Cl. 204-129.750.
McSpadden, John T., to Inventive Technology International, Inc. Dental file. 4,332,561, Cl. 433-102.000.
McWhinnie, John, to Chloride Group Limited. Method of making extended strip of lead-antimony alloys for battery electrodes. 4,332,629, Cl. 148-11.50R.
Mead Corporation, The: *See*—
Calvert, Rodney K., 4,332,123, Cl. 53-475.000.
Hewell, Gerald M., 4,332,204, Cl. 108-1.000.
Mead Johnson & Company: *See*—
Mayol, Robert F.; and Gammans, Richard E., 4,332,803, Cl. 424-267.000.
Means, James E., to United States of America, Navy. Electromagnetic arming rate regulator. 4,332,199, Cl. 102-276.000.
Medgyes, Gabor: *See*—
Kuszmann, Janos; Medgyes, Gabor; Andrasy, Ferenc; and Berzsenyi, Pal, 4,332,818, Cl. 424-285.000.
Medical Engineering Corporation: *See*—
Aperavich, Steven M., 4,332,634, Cl. 156-145.000.
Mellinger, Gary A.: *See*—
Holub, Fred F.; and Mellinger, Gary A., 4,332,929, Cl. 528-185.000.

Melnicki, Leo S.: *See—*
Pouli, Dirk; Melnicki, Leo S.; and Rudd, Eric J., 4,332,662, Cl. 204-265.000.
Melnyk, William, to McCord Corporation. Heat exchanger assembly. 4,332,068, Cl. 29-157.30R.
Melvin, Lawrence S., Jr.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,332,942, Cl. 546-240.000.
Meneghini, Frank A.: *See—*
Kelly, Charles A.; and Meneghini, Frank A., 4,332,950, Cl. 548-146.000.
Meneret, Jean: *See—*
Belval, Michel; Casselman, Chantal; Malet, Jean-Claude; Prats, Christian; and Meneret, Jean, 4,332,170, Cl. 73-40.50R.
Mentrup, Anton: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,332,802, Cl. 424-251.000.
Merck & Co., Inc.: *See—*
Belanger, Patrice C.; and Young, Robert N., 4,332,807, Cl. 424-274.000.
Belanger, Patrice C.; and Young, Robert N., 4,332,810, Cl. 424-267.000.
Firestone, Raymond A., 4,332,813, Cl. 424-273.00R.
Merten, Gerhard; Breuer, Oswald; and Steinkuhl, Bernd, to Gewerkschaft Eisenhutte Westfalia. Coupling devices for connecting a mineral mining machine to a drive chain. 4,332,421, Cl. 299-34.000.
Messer Griesheim GmbH: *See—*
Schmall, Karl-Heinz, 4,333,052, Cl. 324-208.000.
Soecknick, Erhard; and Busse, Jurgen, 4,332,143, Cl. 62-284.000.
Mester, Heinz, to U.S. Philips Corporation. X-Ray generator for fast dose rate control. 4,333,011, Cl. 250-409.000.
Metal Bellows Corporation: *See—*
Huffman, John, 4,332,404, Cl. 285-223.000.
Metallgesellschaft Aktiengesellschaft: *See—*
Drefahl, Klaus; and Gilles, Helmut, 4,332,294, Cl. 165-157.000.
Metallutgie Hoboken-Overpelt: *See—*
De Schepper, Achille; and Coussement, Marc, 4,332,684, Cl. 210-634.000.
Meunier, Jean P.; Barthe, Marie P.; Have, Serge; and Frumen, Bernard, to Saint-Gobain Industries. Method for the continuous fabrication of cellular products of thermohardenable resin. 4,332,754, Cl. 264-45.500.
Mewa Mechanische Weberei Altstadt GmbH: *See—*
Kuttelwesch, Rudolf, 4,332,047, Cl. 8-158.000.
Mialet, Pierre F. Display system. 4,332,565, Cl. 434-118.000.
Mian, Thomas T. Dustless bag breaker. 4,332,334, Cl. 222-83.500.
Michael Kohner Corp., The: *See—*
Kohner, Michael; and Kohner, Frank, 4,332,096, Cl. 40-486.000.
Mieger, Rolf. Hydraulic locking of the boom to the swivel arm of an excavator, crane or the like. 4,332,094, Cl. 37-103.000.
Mifune, Hiroyuki: *See—*
Akimura, Yoshitaka; Hirano, Shigeo; Mifune, Hiroyuki; and Okutsu, Eiichi, 4,332,878, Cl. 430-264.000.
Miki, Minoru: *See—*
Hasegawa, Takashi; Miki, Minoru; and Taniguchi, Yutaka, 4,332,931, Cl. 528-297.000.
Miklas, Edward J.: *See—*
Christmann, Harold F.; and Miklas, Edward J., 4,332,972, Cl. 585-442.000.
Milden, Morton; and Falzarano, Anthony V., to Maddak, Inc. Bowling ball with retractable handle. 4,332,383, Cl. 273-64.000.
Miles, James M. Dual key locks with multi-function tumblers. 4,332,153, Cl. 70-339.000.
Millcell AG: *See—*
Vieli, Otto A., 4,332,907, Cl. 501-39.000.
Vieli, Otto A., 4,332,908, Cl. 501-39.000.
Miller, Alvin L. Rope cutting and sealing machine. 4,332,637, Cl. 156-353.000.
Miller, Anton J., to Bell Telephone Laboratories, Incorporated. Method and apparatus for testing the orientation of crystal plates. 4,332,474, Cl. 356-366.000.
Miller, Larry R.: *See—*
Bock, Gustavus P.; and Miller, Larry R., 4,333,026, Cl. 310-42.000.
Miller, William H. Dose calibrator linearity evaluation. 4,333,010, Cl. 250-252.000.
Milliken Research Corporation: *See—*
Kluger, Edward W.; and Welch, Calvin D., 4,332,928, Cl. 528-113.000.
Milltronics Ltd.: *See—*
Panton, Stanley, 4,333,028, Cl. 310-326.000.
Milner, David J.; and Holland, David, to Imperial Chemical Industries Limited. Preparation of cyclopropane carboxylic acid esters. 4,332,962, Cl. 560-124.000.
Milojevic, Dusica: *See—*
Jambry, Jean-Francois; and Milojevic, Dusica, 4,332,681, Cl. 210-170.000.
Minagawa, Kenichiro: *See—*
Tanizaki, Yoshiharu; Takase, Shigeyuki; Minagawa, Kenichiro; and Watanabe, Kiyomitu, 4,332,689, Cl. 252-49.300.
Minemura, Norihiro; Toyao, Manabu; Kobayashi, Tsukasa; and Tashiro, Mikio, to Teijin Limited. Synthetic fur and process for preparation thereof. 4,332,585, Cl. 8-114.600.
Minetti, Richard H., to Bell Telephone Laboratories, Incorporated. Fabrication of circuit packages using solid phase solder bonding. 4,332,341, Cl. 228-180.00A.
Minnesota Mining and Manufacturing Company: *See—*
Koshar, Robert J., 4,332,954, Cl. 549-10.000.
Misek, Victor A., to Sanders Associates, Inc. Polarization coded doublet laser detection system. 4,333,008, Cl. 250-225.000.
Mita Industrial Co., Ltd.: *See—*
Kimura, Hiroshi; Matsui, Toshikazu; Hisajima, Masahiko; Shigemura, Yutaka; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,332,467, Cl. 355-14.00D.
Mitani, Eisuke: *See—*
Okamoto, Yukio; Mitani, Eisuke; Okabe, Tadao; and Sumioka, Atsushi, 4,333,040, Cl. 315-169.200.
Mitsubishi Chemical Industries, Ltd.: *See—*
Ando, Masao; Hirota, Tetsuya; and Shioda, Katashi, 4,332,623, Cl. 127-46.200.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Ito, Tetsuro; Oizumi, Toshiro; and Yamada, Shigeo, 4,332,995, Cl. 219-69.00V.
Kimura, Hiroshi; and Kai, Junjiro, 4,332,690, Cl. 252-70.000.
Mashiko, Koichiro; Ichiyama, Toshio; and Taniguchi, Makoto, 4,333,168, Cl. 365-210.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natuko; and Watanabe, Toshiyasu, 4,332,966, Cl. 560-206.000.
Nawata, Takanari; Komatsu, Toshio; and Kondoh, Yukio, 4,332,845, Cl. 428-35.000.
Taniyama, Susumu; and Shimaoka, Goro, 4,332,857, Cl. 428-412.000.
Mitsubishi Petrochemical Co., Ltd.: *See—*
Samejima, Hiroshi; Miura, Mareki; and Onuma, Yoshinobu, 4,332,733, Cl. 549-240.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.
Mitsuyama, Akira; Kawano, Tadaaki; Kato, Tutomu; Deguchi, Masanobu; and Katoh, Ituro, to Sharp Kabushiki Kaisha. Fixing device for fixing images of an original document on plain paper copy sheets. 4,332,457, Cl. 355-3.0FU.
Mittleman, Herbert; and Boland, Gordon P., to Baxter Travenol Laboratories, Inc. Administration set including burette with pivotable air valve. 4,332,247, Cl. 128-214.00C.
Miura, Kiyoshi: *See—*
Hayashi, Nobuaki; Akagi, Motoo; Miura, Kiyoshi; and Odaka, Yoshiyuki, 4,332,874, Cl. 430-28.000.
Miura, Mareki: *See—*
Samejima, Hiroshi; Miura, Mareki; and Onuma, Yoshinobu, 4,332,733, Cl. 549-240.000.
Miyake, Kenji: *See—*
Morishita, Tsuyoshi; Yagii, Koji; Inmaru, Kiyokazu; and Miyake, Kenji, 4,332,616, Cl. 75-243.000.
Miyamura, Nobuhiro: *See—*
Takigawa, Hiroyoshi; and Miyamura, Nobuhiro, 4,332,286, Cl. 152-209.00R.
Miyauchi, Hirotsugu: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,332,665, Cl. 204-296.000.
Miyawaki, Masaru; and Konno, Akira, to Takeda Chemical Industries, Ltd. Citrus food containing a cyclodextrin. 4,332,825, Cl. 426-330.500.
Mizelle, Ned W., to Hoover Universal, Inc. Reclining actuator for a recliner chair. 4,332,417, Cl. 297-329.000.
Mizumura, Shizuo, to Kabushiki Kaisha Tokyo Kikai Seisakusho. Variable-amplitude vibrator for inking rollers in printing presses. 4,332,195, Cl. 101-349.000.
Mizutani, Kiyokazu: *See—*
Endo, Takeshi; Ogasawara, Takahisa; and Mizutani, Kiyokazu, 4,332,731, Cl. 549-334.000.
Mletzko, Alfred E.; and Gonet, Andrew P., to Eltra Corporation. Scanning and control system for electro optical printer. 4,333,153, Cl. 364-523.000.
Mlodozeniec, Arthur R., to Hoffmann-La Roche Inc. Pharmaceutical unit dosage forms. 4,332,789, Cl. 424-27.000.
Mobay Chemical Corporation: *See—*
Allen, Gary F., 4,332,742, Cl. 260-453.0SP.
Nodelman, Neil H., 4,332,936, Cl. 536-120.000.
Mobil Oil Corporation: *See—*
Antal, Michael J., 4,332,670, Cl. 208-68.000.
Clayton, William J., 4,332,347, Cl. 229-62.000.
Mochida, Ei; Shinkai, Hiroyuki; Kudo, Takashi; and Sugawara, Toshiyuki, to Mochida Seiyaku Kabushiki Kaisha. Method of determining an antigen, antibody for antigen-antibody complex including fixing the aggregates thereof. 4,332,788, Cl. 424-12.000.
Mochida Seiyaku Kabushiki Kaisha: *See—*
Mochida, Ei; Shinkai, Hiroyuki; Kudo, Takashi; and Sugawara, Toshiyuki, 4,332,788, Cl. 424-12.000.
Mochizuki, Noritaka; and Kubota, Atsushi, to Canon Kabushiki Kaisha. Slit illuminating device. 4,333,130, Cl. 362-293.000.
Modular Systems, Inc.: *See—*
Corl, Robert W., Jr., 4,332,205, Cl. 108-60.000.
Moldovan, Richard J.; and Davis, Harold D., to Lear Siegler, Inc. Variable speed centrifugal pump. 4,332,527, Cl. 417-15.000.
Molex Incorporated: *See—*
Colleran, Stephen A., 4,332,432, Cl. 339-75.00M.
Mones, Arthur H.: *See—*
Page, Jay P.; and Mones, Arthur H., 4,332,624, Cl. 134-3.000.

Monsanto Company: *See*—
Alt, Gerhard H., 4,332,614, Cl. 71-118.000.
Fulton, John L.; and Hopfe, Harold H., 4,332,543, Cl. 425-461.000.

Montedison S.p.A.: *See*—
Di Drusco, Giovanni; Rinaldi, Roberto; and Govoni, Gabriele, 4,332,933, Cl. 528-500.000.

Moody, Edward: *See*—
Crosgrove, Robert O.; Moody, Edward; and Sletten, Harold L., 4,332,639, Cl. 376-253.000.

Moore, Francis D. Mirror for the aphakic eye. 4,333,128, Cl. 362-135.000.

Moore, Leslie T. Video room. 4,332,113, Cl. 52-6.000.

Moran, John P., to Ex-Cell-O Corporation. Container with infolded bottom closure. 4,332,345, Cl. 229-37.00R.

Morcom, William R.; Nicolay, Hugh C.; and Peters, Jeffrey D., to Harris Corporation. Aluminum Schottky contacts and silicon-aluminum interconnects for integrated circuits. 4,333,100, Cl. 357-71.000.

Morehead, Enoch W. Cat catcher (fishing device). 4,332,099, Cl. 43-15.000.

Morgan Construction Company: *See*—
Pariseau, David L., 4,332,155, Cl. 72-66.000.

Morigaki, Ken'Ichi: *See*—
Sotomura, Tadashi; Sekido, Satoshi; Morigaki, Ken'Ichi; Okazaki, Ryoji; and Nakai, Muneaki, 4,332,865, Cl. 429-48.000.

Morimoto, Kiyoshi: *See*—
Kimura, Hiroshi; Matsui, Toshikazu; Hisajima, Masahiko; Shigemura, Yutaka; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,332,467, Cl. 355-14.00D.

Morin, Theodore J.: *See*—
Huppunen, Robert D.; and Morin, Theodore J., 4,332,373, Cl. 266-228.000.

Morishita, Tsuyoshi; Yagii, Koji; Inmaru, Kiyokazu; and Miyake, Kenji, to Toyo Kogyo Co., Ltd. Hard-particle dispersion type sintered-alloy for valve seat use. 4,332,616, Cl. 75-243.000.

Moriyama, Inao: *See*—
Ohara, Katsunobu; Tanaka, Keiji; Ando, Yujiro; and Moriyama, Inao, 4,332,876, Cl. 430-68.000.

Morrison-Knudsen Company, Inc.: *See*—
Drum, Ian; Madenburg, Richard S.; Paulsrude, Douglas M.; Sherman, Carroll H.; Turpin, Frank G.; and Wheatcroft, Gerry A., 4,332,774, Cl. 422-111.000.

Morton-Norwich Products, Inc.: *See*—
Alaimo, Robert J.; Gray, Joseph E.; and Klein, George M., 4,332,735, Cl. 549-496.000.

Mosing, Lionel W.: *See*—
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., 4,332,464, Cl. 355-14.00C.

Mosley, William H., Jr.; and Andren, Carl F., to E-Systems, Inc. Phase locked loop for recovering data bit timing. 4,333,060, Cl. 331-1.00A.

Mosse, Richard W. E., to Novus Corp. N.V. Packaging. 4,332,577, Cl. 493-74.000.

Motorola, Inc.: *See*—
Maeder, Heinz B., 4,333,020, Cl. 307-279.000.

Moulden, R. Edward, to Consan Pacific Incorporated. Antistatic equipment employing positive and negative ion sources. 4,333,123, Cl. 361-213.000.

Moulin, Michel: *See*—
Devaud, Jacques; Costet, Jean-Robert; and Moulin, Michel, 4,333,154, Cl. 364-559.000.

Mowe, Wayne T.: *See*—
Blackmon, Lawrence E.; Dees, John R.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-Peir, 4,332,757, Cl. 264-103.000.
Blackmon, Lawrence E.; Dees, John R.; and Mowe, Wayne T., 4,332,758, Cl. 264-103.000.

Mozzhukhin, Anatoly A.: *See*—
Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; and Maximovich, Boleslav I., 4,332,997, Cl. 219-9.500.

MPD Technology Corporation: *See*—
Bernstein, Philip; Coffey, James P.; Varker, Alan E.; Arms, John T.; Clark, William D. K.; and Goodell, Paul D., 4,332,698, Cl. 252-430.000.
Rhoda, Richard N.; and Crosby, Jeffrey N., 4,332,780, Cl. 423-413.000.

Mueller, Dale A.; Ruminsky, Robert T.; Serber, Stephen L.; and Wolfgram, Rodger C., to Honeywell Inc. Defrost control system for refrigeration system. 4,332,141, Cl. 62-140.000.

Mueller, Elmar: *See*—
Jester, Alfred; Mueller, Elmar; and Holick, Hubert, 4,333,102, Cl. 357-81.000.

Muir, David D.: *See*—
Griffiths, Mansel W.; Muir, David D.; and Phillips, John D., 4,332,895, Cl. 435-105.000.

Mullen, John W., III. Puzzle comprising blocks with rabbeted ends. 4,332,387, Cl. 273-156.000.

Mullen, Noel A.: *See*—
Newsome, Peter M.; and Mullen, Noel A., 4,332,814, Cl. 424-273.00R.

Muller, Hans: *See*—
Andre, Wolfram; and Muller, Hans, 4,333,037, Cl. 315-3.000.

Muller, Tore B. Process for continuous crystallization. 4,332,592, Cl. 23-301.000.

Muller, Werner H.: *See*—
Berthold, Rudiger; and Muller, Werner H., 4,332,941, Cl. 546-191.000.

Muller, Wolfgang H. E.; and Zolffel, Michael, to Chemische Werke Huls Aktiengesellschaft. Process for the separation of methanol from mixtures of tetrahydrofuran with methanol and water. 4,332,645, Cl. 203-75.000.

Mullins, Michael J.: *See*—
Woo, Edmund P.; and Mullins, Michael J., 4,332,734, Cl. 549-253.000.

Mulock-Bentley, Desmond, to D. Mulock-Bentley and Associates (Proprietary) Limited. Heat exchanger with slotted fin strips. 4,332,291, Cl. 165-76.000.

Multi-Contact AG: *See*—
Neidecker, Rudolf; and Rusing, Bernd, 4,332,434, Cl. 339-258.00R.

Munih, Pavel, to SAVA KRANJ Industrija gumijevih, usnjenih in kemicnih izdelkov n.o.sol.o. Method for separating rubber from metal. 4,332,700, Cl. 204-155.000.

Murai, Atsushi: *See*—
Kimura, Kouhei; Ohba, Hiroyasu; and Murai, Atsushi, 4,332,697, Cl. 252-429.00B.

Murakami, Toshio: *See*—
Noda, Masaru; and Murakami, Toshio, 4,333,111, Cl. 358-213.000.

Muralidhara, H. S., to Systems Consultants, Inc. Recovery of potential energy and chromium values from leather tannery wastes. 4,332,584, Cl. 8-94.270.

Murarka, Shyam P.: *See*—
Levinstein, Hyman J.; Murarka, Shyam P.; and Sinha, Ashok K., 4,332,839, Cl. 427-85.000.

Murashov, Oleg D.: *See*—
Mutalibov, Abdusalam A.; Murashov, Oleg D.; Makhmudov, Takhir M.; Shvartsman, Leonid M.; Deminov, Alexei D.; Podlesnykh, Valentina A.; and Spirin, Lev A., 4,332,486, Cl. 366-146.000.

Murata, Yorihiro, to Kennecott Corporation. Sintered silicon carbide - aluminum nitride articles and method of making such articles. 4,332,755, Cl. 264-65.000.

Muse, Ralph F., to Hubbard Company. Garment waistband structures. 4,332,034, Cl. 2-237.000.

Mutalibov, Abdusalam A.; Murashov, Oleg D.; Makhmudov, Takhir M.; Shvartsman, Leonid M.; Deminov, Alexei D.; Podlesnykh, Valentina A.; and Spirin, Lev A. Rotary pulsation apparatus. 4,332,486, Cl. 366-146.000.

Myers, George D., to Ashland Oil, Inc. High metal carbo-metallic oil conversion. 4,332,673, Cl. 208-120.000.

N.K.F. Groep B.V.: *See*—
Post, Jan, 4,332,435, Cl. 350-96.200.

N/S Car Wash Enterprises, Inc.: *See*—
Ennis, George T., 4,332,625, Cl. 134-6.000.

N. V. Bekaert S. A.: *See*—
Desmet, John, 4,332,862, Cl. 428-593.000.

Nagahama, Takashi: *See*—
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Full wave rectifier. 4,333,141, Cl. 363-127.000.

Nagata, Takenori: *See*—
Nakazawa, Takaaki; Nagata, Takenori; Kuroda, Yasuo; and Suzuki, Toshio, 4,332,412, Cl. 296-29.000.

Nagata, Wataru: *See*—
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,332,722, Cl. 260-245.400.

Nagoya, Yoshinari: *See*—
Yamazaki, Susumu; Nagoya, Yoshinari; and Shimizu, Masajiro, 4,332,146, Cl. 62-353.000.

Naito, Hideshi: *See*—
Nozawa, Hideyo; and Naito, Hideshi, 4,332,444, Cl. 354-79.000.

Naitoh, Takumi: *See*—
Nakahara, Yasushi; Ohtomo, Tadasuke; Yurugi, Masahiro; Naitoh, Takumi; and Kaiho, Kenichi, 4,332,516, Cl. 414-288.000.

Nakagawa, Noboru; Oonishi, Toshiyuki; Tsutsumi, Masato; and Kawamoto, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Refrigerating apparatus. 4,332,138, Cl. 62-199.000.

Nakahama, Syuhei; and Yamashita, Etsu, to Carrier Corporation. Method for welding an impeller. 4,333,001, Cl. 219-125.100.

Nakahara, Yasushi; Ohtomo, Tadasuke; Yurugi, Masahiro; Naitoh, Takumi; and Kaiho, Kenichi, to Kajima Corporation. Method and apparatus for throwing down concrete. 4,332,516, Cl. 414-288.000.

Nakahata, Kimio: *See*—
Tamura, Yasuyuki; Nakahata, Kimio; and Ishida, Masato, 4,333,124, Cl. 361-214.000.

Nakai, Kiyoto: *See*—
Yamauchi, Katsuyoshi; and Nakai, Kiyoto, 4,332,633, Cl. 156-62.200.

Nakai, Muneaki: *See*—
Sotomura, Tadashi; Sekido, Satoshi; Morigaki, Ken'Ichi; Okazaki, Ryoji; and Nakai, Muneaki, 4,332,865, Cl. 429-48.000.

Nakajima, Mutsuo: *See*—
Arai, Mamoru; Torikata, Akio; Enokita, Ryuzou; Haneishi, Tatsuo; and Nakajima, Mutsuo, 4,332,902, Cl. 435-253.000.

Nakano, Eiichi; Saito, Narimasa; and Fukushima, Danji, to Noda Institute for Scientific Research. Novel bacteriophage and method for preparing same. 4,332,897, Cl. 435-172.000.

Nakano, Yoshiyuki; and Tanaka, Etsuo, to Nippon Kogaku K.K. Electric shutter for camera. 4,332,452, Cl. 354-234.000.

Nakaya, Akira: *See*—
Aoyama, Takahiko; and Nakaya, Akira, 4,332,574, Cl. 474-161.000.

Nakayama, Akira: *See*—
Ohgoshi, Akio; Nakayama, Akira; Tsukamura, Yoshihiro; and Natori, Takehisa, 4,333,034, Cl. 313-407.000.
Nakayama, Hiroyuki: *See*—
Makuuchi, Keizo; Katakai, Akio; Hagiwara, Miyuki; Yamamoto, Tsutomu; Nakayama, Hiroyuki; and Takagi, Tohru, 4,332,657, Cl. 204-159.220.
Nakayama, Tetsuya: *See*—
Igarashi, Michiaki; Nakayama, Tetsuya; and Yamano, Shigemi, 4,332,517, Cl. 414-699.000.
Nakazawa, Takaaki; Nagata, Takenori; Kuroda, Yasuo; and Suzuki, Toshio, to Aisin Seiki Kabushiki Kaisha. Accessory molding strip. 4,332,412, Cl. 296-29.000.
Nalco Chemical Company: *See*—
Slovinsky, Manuel; and Maciaszek, Joseph A., 4,332,696, Cl. 252-321.000.
Napier, Loyd S.; and Pollard, Jim L., to Napier, Loyd S. Combined bow with a unitary sight and cable guard. 4,332,231, Cl. 124-24.00R.
Narasimhan, Mandayam C., to Allied Corporation. Structurally defined glassy metal strips. 4,332,848, Cl. 428-174.000.
Narisada, Masayuki: *See*—
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,332,722, Cl. 260-245.400.
Naruo, Masaki: *See*—
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.
Nassau Recycle Corporation: *See*—
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,332,677, Cl. 209-3.000.
National Distillers & Chemical Corp.: *See*—
Braus, Harry; Barlow, Anthony; and Maringer, Melvin F., 4,332,957, Cl. 556-446.000.
Fischer, Joseph; and Platz, Gerald M., 4,332,846, Cl. 428-131.000.
National Mine Service Company: *See*—
McNally, Frank X., 4,332,772, Cl. 422-97.000.
National Research Development Corp.: *See*—
Griffiths, Mansel W.; Muir, David D.; and Phillips, John D., 4,332,895, Cl. 435-105.000.
National Semiconductor Corporation: *See*—
George, Peter K., 4,333,163, Cl. 365-43.000.
Reyling, George F., 4,333,162, Cl. 365-15.000.
Natori, Takehisa: *See*—
Ohgoshi, Akio; Nakayama, Akira; Tsukamura, Yoshihiro; and Natori, Takehisa, 4,333,034, Cl. 313-407.000.
Nawata, Takanari; Komatsu, Toshio; and Kondoh, Yukio, to Mitsubishi Gas Chemical Company, Inc. Oxygen absorbent-containing bag. 4,332,845, Cl. 428-35.000.
NCR Corporation: *See*—
Gorin, Brian A.; and Hardy, James A., 4,333,006, Cl. 235-457.000.
Nedelec, Lucien: *See*—
Guillaume, Jacques; Nedelec, Lucien; Dumont, Claude; and Fournex, Robert, 4,332,808, Cl. 424-263.000.
Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek: *See*—
Heslinga, Adolf; and Greidanus, Pieter J., 4,332,917, Cl. 521-134.000.
Neff, Paul H.: *See*—
Brownlee, Robert R.; Tyers, G. Frank; and Neff, Paul H., 4,332,256, Cl. 128-419.0PT.
Neidecker, Rudolf; and Rusing, Bernd, to Multi-Contact AG. Electric terminal and assembly containing same. 4,332,434, Cl. 339-258.00R.
Nelson, Norman A., to NL Industries, Inc. Blowout preventer having a variable ram seal. 4,332,367, Cl. 251-1.00A.
Neufeld, Henry L., to Brunswick Corporation. Spin casting type fishing reel with improved dual crank bearing retention means. 4,332,358, Cl. 242-84.20A.
Newsome, Peter M.; and Mullen, Noel A., to Beecham Group Limited. Treatment of diarrhoea. 4,332,814, Cl. 424-273.00R.
Nicolaisen, Peter, to Fraunhofer Gesellschaft zur Forderung der angewandten Forschung e.v. Safety arrangement for systems having parts spatially moved. 4,332,989, Cl. 200-47.000.
Nicolay, Hugh C.: *See*—
Morcom, William R.; Nicolay, Hugh C.; and Peters, Jeffrey D., 4,333,100, Cl. 357-71.000.
Nigrelli, Biagio J., to Nigrelli Corporation. Loading blades for packaging apparatus. 4,332,121, Cl. 53-251.000.
Nigrelli Corporation: *See*—
Nigrelli, Biagio J., 4,332,121, Cl. 53-251.000.
Nihno, Tomiyo: *See*—
Kamogashira, Takashi; Nishida, Tsutomu; Sugawara, Michiharu; Nihno, Tomiyo; and Takegata, Setsuko, 4,332,891, Cl. 435-48.000.
Nimer, Edward L.; and Campbell, Robert W., to Chevron Research. Sulfur cement-aggregate compositions and methods for preparing. 4,332,911, Cl. 501-140.000.
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, to Toyo Engineering Corporation; Mitsui Toatsu Chemicals, Inc.; and Tsukishima Kikai Co., Ltd., a part interest to each. Granule producing apparatus. 4,332,211, Cl. 118-62.000.
Nippon Electric Co., Ltd.: *See*—
Ryu, Toshihiko; and Koizumi, Yutaka, 4,333,063, Cl. 333-18.000.
Sato, Hisaaki, 4,333,038, Cl. 315-3.500.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Hasegawa, Noriyoshi, 4,332,384, Cl. 273-73.00F.
Ohta, Hajime, 4,333,114, Cl. 360-66.000.
Nippon Kogaku K.K.: *See*—
Nakano, Yoshiyuki; and Tanaka, Etsuo, 4,332,452, Cl. 354-234.000.
Nozawa, Hideyo; and Naito, Hideshi, 4,332,444, Cl. 354-79.000.
Nippon Oil and Fats Co., Ltd.: *See*—
Kato, Kenji; and Hagii, Hidehiko, 4,332,740, Cl. 260-453.0RZ.
Tanizaki, Yoshiharu; Takase, Shigeyuki; Minagawa, Kenichiro; and Watanabe, Kiyomitu, 4,332,689, Cl. 252-49.300.
Nippon Sheet Glass Co., Ltd.: *See*—
Terashima, Kenzi, 4,332,111, Cl. 52-1.000.
Nippon Soken, Inc.: *See*—
Kawai, Hisasi; Egami, Tsuneyuki; Kohama, Tokio; and Obayashi, Hideki, 4,332,165, Cl. 73-204.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
Kato, Seiji; Ueno, Norio; Kakuishi, Mitsuo; Ito, Akihiko; and Iwata, Atsushi, 4,333,064, Cl. 333-173.000.
Nippondenso Co., Ltd.: *See*—
Hiramatsu, Michio, 4,332,293, Cl. 165-153.000.
Yoshimura, Junjiro; Furukawa, Akira; and Ando, Takehiro, 4,332,268, Cl. 137-81.100.
Nir, Isaac, to ADI-Aeroponics Growth Ltd. Apparatus and method for plant growth in aeroponic conditions. 4,332,105, Cl. 47-1.00R.
Nishida, Katsutoshi; and Ochiai, Toshihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Silicon nitride based sintered product and method of producing the same. 4,332,909, Cl. 501-97.000.
Nishida, Tsutomu: *See*—
Kamogashira, Takashi; Nishida, Tsutomu; Sugawara, Michiharu; Nihno, Tomiyo; and Takegata, Setsuko, 4,332,891, Cl. 435-48.000.
Nishikubo, Yasuhiko, to Citizen Watch Co., Ltd. Electronic timepiece with diffusion resistor for compensating threshold variations. 4,333,171, Cl. 368-87.000.
Nissan Motor Company, Ltd.: *See*—
Imai, Eiji; and Omote, Kazuaki, 4,332,187, Cl. 98-2.170.
Nitta, Tsuneharu: *See*—
Kugimiya, Koichi; Hosomi, Fumio; Matsuo, Yoshihiro; and Nitta, Tsuneharu, 4,333,067, Cl. 338-34.000.
Nitz, Rolf-Eberhard: *See*—
Schonafinger, Karl; Beyerle, Rudi; Nitz, Rolf-Eberhard; Martorana, Piero A.; and Fiedler, Volker, 4,332,801, Cl. 424-246.000.
NL Circuit Design Block Co., Ltd.: *See*—
Kakino, Yoshiaki, 4,332,161, Cl. 73-104.000.
NL Industries, Inc.: *See*—
Nelson, Norman A., 4,332,367, Cl. 251-1.00A.
Noda Institute for Scientific Research: *See*—
Nakano, Eiichi; Saito, Narimasa; and Fukushima, Danji, 4,332,897, Cl. 435-172.000.
Noda, Masaru; and Murakami, Toshio, to Hitachi, Ltd. Signal processing circuit for solid-state camera. 4,333,111, Cl. 358-213.000.
Noda, Shinji: *See*—
Tanaka, Yasunori; Noda, Shinji; and Chikamasa, Hiroshi, 4,332,840, Cl. 427-130.000.
Nodelman, Neil H., to Mobay Chemical Corporation. Method of making polyether polyols from solid hydroxyl containing initiators. 4,332,936, Cl. 536-120.000.
Nogues, Pastora S. Mathematical teaching apparatus. 4,332,567, Cl. 434-195.000.
Nolan, Robert F.: *See*—
Zopfy, Rainer K.; Nolan, Robert F.; and Stapf, Carl J., 4,332,355, Cl. 242-56.00R.
Nomura, Toshio; and Kobayashi, Isao, to Honda Giken Kogyo Kabushiki Kaisha. Engine control system. 4,332,226, Cl. 123-494.000.
Nomura, Yoshihisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Shoe hold-down device in a drum brake. 4,332,311, Cl. 188-340.000.
Noordam, Arend: *See*—
Kooijmans, Petrus G.; Kunze, Wolfgang; and Noordam, Arend, 4,332,709, Cl. 523-416.000.
Nordin, Richard M. Currency reception and storage device. 4,332,348, Cl. 232-43.300.
Nordstrom, Arnold B. Electrical toggle switch. 4,332,991, Cl. 200-67.00G.
Nordvall, Jan O., to ASEA Aktiebolag. Deflector roll. 4,332,154, Cl. 72-31.000.
Norris Industries, Inc.: *See*—
Lockwood, Alan C., 4,332,330, Cl. 220-3.500.
North American Philips Corporation: *See*—
Francis, Gaylord L., 4,332,081, Cl. 29-612.000.
North, Bernard F., to Sun Chemical Corporation. Novel reactants for crosslinking textile fabrics. 4,332,586, Cl. 8-186.000.
Northcutt, Walter G., Jr.: *See*—
Hovis, Victor M., Jr.; and Northcutt, Walter G., Jr., 4,332,617, Cl. 75-214.000.
Northrop Corporation: *See*—
Mathews, Lemuel P.; Lohman, Charles A.; and Armstrong, Paul R., 4,333,170, Cl. 367-125.000.
Norwood Industries, Inc.: *See*—
McCartney, John, 4,332,710, Cl. 524-591.000.
Noszticzius, Zoltan; Olah, Karoly; Vajta, Zsofia; Palmai, Gyorgy; Patonay, Gabor; and Szommer, Ferenc, to Csepel Muvek Hiradastechnikai Gepgyara. Gas producing electrolytic cell for portable devices. 4,332,664, Cl. 204-266.000.
Novacek, Edward P., to International Minerals & Chemical Corp. Spreading apparatus for mixed density materials. 4,332,336, Cl. 222-269.000.

Novus Corp. N.V.: *See*—
Mosse, Richard W. E., 4,332,577, Cl. 493-74.000.

Nowlin, Duane D.; and Winberg, Dennis G., to Ecodyne Corporation. Method and apparatus for treating water. 4,332,685, Cl. 210-638.000.

Nowoczyn, Hans-Werner: *See*—
Dalstein, Rolf; Spies, Johann; Greif, Hans-Dieter; Termath, Gunter; Unbescheid, Jurgen; and Nowoczyn, Hans-Werner, 4,332,241, Cl. 126-450.000.

Noyes, Billy P. Thermal line printer. 4,332,193, Cl. 101-93.010.

Nozawa, Hideyo; and Naito, Hideshi, to Nippon Kogaku K.K. Photographic lens capable of photographing the magnifications. 4,332,444, Cl. 354-79.000.

Nozemack, Richard J., to W. R. Grace & Co. Catalyst preparation. 4,332,699, Cl. 252-455.00Z.

NRM Corporation: *See*—
Singh, Anand P.; and Schichman, Daniel, 4,332,536, Cl. 425-33.000.

Nunokawa, Atsushi: *See*—
Tsurumaru, Michiko; Suzuki, Yukio; and Nunokawa, Atsushi, 4,332,646, Cl. 204-1.00T.

Nyfeler, Robert, to Ciba-Geigy Corporation. Fungicidal 3-(N-carbonylamino)-pyrrolidine-2,5-diones. 4,332,816, Cl. 424-274.000.

Obayashi, Hideki: *See*—
Kawai, Hisasi; Egami, Tsuneyuki; Kohama, Tokio; and Obayashi, Hideki, 4,332,165, Cl. 73-204.000.

Oberth, Adolph E.: *See*—
Conyers, John A.; Oberth, Adolph E.; and Santerre, George M., 4,332,632, Cl. 149-19.200.

O'Brien, Sean A.: *See*—
Yuhasz, Joseph M.; and O'Brien, Sean A., 4,332,145, Cl. 62-342.000.

O'Cheskey, Theodore H., to United States Filter Fluid Systems Corporation. Filter sluicing apparatus. 4,332,680, Cl. 210-143.000.

Ochiai, Toshihiko: *See*—
Nishida, Katsutoshi; and Ochiai, Toshihiko, 4,332,909, Cl. 501-97.000.

O'Connell, John J. Method and apparatus for closed loop vortex operation. 4,333,017, Cl. 290-2.000.

Oda, Norimasa: *See*—
Harada, Kunihiro; Kasai, Kiyoshi; Maki, Yoshiki; and Oda, Norimasa, 4,332,932, Cl. 528-481.000.

Odaka, Yoshiyuki: *See*—
Hayashi, Nobuaki; Akagi, Motoo; Miura, Kiyoshi; and Odaka, Yoshiyuki, 4,332,874, Cl. 430-28.000.

Offermanns, Heribert: *See*—
Beschke, Helmut; Friedrich, Heinz; and Offermanns, Heribert, 4,332,940, Cl. 546-181.000.

Officine Savio S.p.A.: *See*—
Macchi, Massimo, 4,332,580, Cl. 493-346.000.

Ogasa, Takehiro: *See*—
Hashimoto, Yukio; Kimura, Kazuo; Hirata, Tadashi; Ogasa, Takehiro; Kobayashi, Shigeru; and Matsukuma, Ikuo, 4,332,896, Cl. 435-119.000.

Ogasawara, Takahisa: *See*—
Endo, Takeshi; Ogasawara, Takahisa; and Mizutani, Kiyokazu, 4,332,731, Cl. 549-334.000.

Ogawa, Francis T.: *See*—
Langlais, Richard A.; Ogawa, Francis T.; and Wilwerding, Dennis J., 4,333,007, Cl. 250-201.000.

Ogawa, Katsumi: *See*—
Inoue, Kimio; Ogawa, Katsumi; Fukui, Tsugushi; Asai, Toshihiro; and Hashizume, Shinji, 4,332,481, Cl. 366-84.000.

Ogawa, Nobuhiro: *See*—
Ishii, Takami; Takikawa, Naohisa; Tokunaga, Kiyoaki; and Ogawa, Nobuhiro, 4,332,930, Cl. 528-233.000.

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Kobayashi, Akio; and Ogihara, Takeo, 4,332,919, Cl. 524-504.000.

Ogino, Shigeo: *See*—
Kanaoka, Masaharu; Yanagi, Hideki; and Ogino, Shigeo, 4,332,717, Cl. 260-112.00R.

Ognibeni, Karl-Heinz: *See*—
Hengst, Bernd; Grosspietsch, Wolfgang; and Ognibeni, Karl-Heinz, 4,332,679, Cl. 210-90.000.

Ohara, Katsunobu; Tanaka, Keiji; Ando, Yujiro; and Moriyama, Inao, to Canon Kabushiki Kaisha. Electrophotographic screen. 4,332,876, Cl. 430-68.000.

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Olson, Richard G., 4,332,793, Cl. 424-89.000.

Ohmatsu, Hideki, to Fuji Photo Film Co., Ltd. Photographic sensitive materials for color diffusion transfer process. 4,332,885, Cl. 430-506.000.

Ohmura, Jukichi: *See*—
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,332,665, Cl. 204-296.000.

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Ota, Isao; Shirazawa, Haruhiro; Tatsumichi, Toshio; Kawarada, Hiroshi; and Ohtsuka, Tetsuro, 4,332,075, Cl. 29-571.000.

Oi, Naobumi; Itoh, Tadamasa; and Yasumasa, Yoshiaki, to Sumitomo Chemical Company, Limited. Analytical method and apparatus for the determination of total nitrogen contents in aqueous systems. 4,332,591, Cl. 23-230.0PC.

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Ojima, Masahiro: *See*—
Yonezawa, Seiji; Sugiyama, Toshio; and Ojima, Masahiro, 4,333,173, Cl. 369-45.000.

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Koiwa, Yoshinori; Oka, Daishiro; and Takeda, Shoroku, 4,333,103, Cl. 358-19.000.

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Okamoto, Yukio; Mitani, Eisuke; Okabe, Tadao; and Sumioka, Atsushi, 4,333,040, Cl. 315-169.200.

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Okazaki, Ryoji: *See*—
Sotomura, Tadashi; Sekido, Satoshi; Morigaki, Ken'Ichi; Okazaki, Ryoji; and Nakai, Muneaki, 4,332,865, Cl. 429-48.000.

Okonski, Edward B.: *See*—
Rudnick, Jack Z.; Okonski, Edward B.; and Rottenkolber, John J., 4,332,055, Cl. 16-335.000.

Okuda, Tadanobu, to Kyushu Hitachi Maxell, Ltd. Self-propelled record cleaner. 4,332,050, Cl. 15-246.000.

Okuno, Youichi, to Canon Kabushiki Kaisha. View finder for camera. 4,332,446, Cl. 354-155.000.

Okutsu, Eiichi: *See*—
Akimura, Yoshitaka; Hirano, Shigeo; Mifune, Hiroyuki; and Okutsu, Eiichi, 4,332,878, Cl. 430-264.000.

Olah, Karoly: *See*—
Noszticzius, Zoltan; Olah, Karoly; Vajta, Zsofia; Palmai, Gyorgy; Patonay, Gabor; and Szommer, Ferenc, 4,332,664, Cl. 204-266.000.

Olin Corporation: *See*—
Ford, James M.; and Adams, John O., 4,332,661, Cl. 204-253.000.
Harris, Frederick J., 4,332,340, Cl. 227-10.000.

Olivieri, Roberto; Eletti Bianchi, Giancarlo; Fascetti, Eugenio; Centini, Felice; Degen, Ludwig; and Marconi, Walter, to E.N.I. Ente Nozionale Idrocarburi. Process for preparing carbamyl derivatives of α-hydroxy acids and the corresponding α-hydroxy acids. 4,332,905, Cl. 435-280.000.

Olson, Richard G., to Ohio State University Research Foundation, The. Method of recovering cell antigen and preparation of feline leukemia vaccine therefrom. 4,332,793, Cl. 424-89.000.

Oltendorf, Norman E., to Bodine Electric Company. Acceleration shaping circuit for a stepper motor. 4,333,045, Cl. 318-696.000.

Olympus Optical Company Ltd.: *See*—
Kato, Yutaka; Tokitoh, Hirohiko; Kitahara, Tomohiro; and Ito, Hiromi, 4,332,472, Cl. 356-344.000.
Ookawa, Kaneyas, 4,332,442, Cl. 350-469.000.
Tsuboshima, Kosaku, 4,332,658, Cl. 204-195.00M.
Tsunefuji, Katsuhiko, 4,332,447, Cl. 354-209.000.

Omote, Kazuaki: *See*—
Imai, Eiji; and Omote, Kazuaki, 4,332,187, Cl. 98-2.170.

Ona, Isao; and Ozaki, Masaru, to Toray Silicone Limited. Vinyl resin compositions comprising an organopolysiloxane. 4,332,715, Cl. 524-265.000.

Onari, Mikihiko: *See*—
Wakamori, Fumio; Funabashi, Motohisa; Kata, Mamoru; Hirano, Takazo; and Onari, Mikihiko, 4,332,507, Cl. 405-92.000.

Ono, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for detecting a mutual positional relationship of two sample members. 4,332,473, Cl. 356-356.000.

Onuma, Yoshinobu: *See*—
Samejima, Hiroshi; Miura, Mareki; and Onuma, Yoshinobu, 4,332,733, Cl. 549-240.000.

Ookawa, Kaneyas, to Olympus Optical Co., Ltd. Reproducing objective for video disks. 4,332,442, Cl. 350-469.000.

Oonishi, Toshiyuki: *See*—
Nakagawa, Noboru; Oonishi, Toshiyuki; Tsutsumi, Masato; and Kawamoto, Akira, 4,332,138, Cl. 62-199.000.

Opitz, Wolfgang: *See*—
Etschenberg, Eugen; Jacobi, Haireddin; and Opitz, Wolfgang, 4,332,819, Cl. 424-301.000.

Opprecht, Paul. Apparatus for resistance welding of can bodies. 4,332,994, Cl. 219-64.000.

Orikabe, Yasuo; and Matsuda, Masakazu, to Fujitsu Limited. Read only memory. 4,333,164, Cl. 365-104.000.

Orrico, Mario M. V.: *See*—
Martin, Ronald L.; and Orrico, Mario M. V., 4,332,269, Cl. 137-84.000.

Orth, Winfried; Lange, Fritz W.; and Fickert, Werner, to Rutgerswerke Aktiengesellschaft. Process for the preparation of bisacyl hydrazines. 4,332,728, Cl. 548-519.000.

Osborne, Howard S. Slump testing device. 4,332,158, Cl. 73-59.000.

Osborne, William E., to Homexx International Corp. Swimming pool alarm. 4,333,094, Cl. 340-566.000.

Oskam, Herman: *See*—
Frentzel, Kurt H.; and Oskam, Herman, 4,332,288, Cl. 160-176.00R.

Ota, Isao; Shirazawa, Haruhiro; Tatsumichi, Toshio; Kawarada, Hiroshi; and Ohtsuka, Tetsuro, to Matsushita Electric Industrial Co., Ltd. Method of producing thin film transistor array. 4,332,075, Cl. 29-571.000.

Otsuka, Kazuo: *See*—
Yui, Masatoshi; Takeoda, Minoru; and Otsuka, Kazuo, 4,333,049, Cl. 324-102.000.

Otsuka Pharmaceutical Co., Ltd.: *See*—
Kamogashira, Takashi; Nishida, Tsutomu; Sugawara, Michiharu; Nihno, Tomiyo; and Takegata, Setsuko, 4,332,891, Cl. 435-48.000.

Ott, Louis E., to Standard Oil Company (Indiana). Fertilizing plants with polyborates. 4,332,609, Cl. 71-27.000.

Otto, Gunter; and Eiler, Peter, to Leo Gottwald KG, Firma. Mobile crane. 4,332,328, Cl. 212-180.000.

Oude Alink, Bernardus A.: *See*—
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,332,967, Cl. 564-162.000.

Outlaw, Benjamin T.: *See*—
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,332,967, Cl. 564-162.000.

Over, William R.: *See*—
Johnson, Keith, Jr.; Long, Robert A.; and Over, William R., 4,332,083, Cl. 29-749.000.

Overland, Donald L.; and Gauvin, Glen A., to Detection Sciences, Inc. Universal signal translator for motor speed control. 4,333,041, Cl. 318-317.000.

Owen, Daniel V.; and Smith, Alan M., to General Electric Company. Static inverter. 4,333,139, Cl. 363-97.000.

Owens-Corning Fiberglas Corporation: *See*—
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,332,603, Cl. 65-27.000.
Marzocchi, Alfred; Roberts, Michael G.; Bolen, Charles E.; and Harrington, Edward R., 4,332,704, Cl. 523-203.000.
Propster, Mark A., 4,332,604, Cl. 65-27.000.
Roberts, Michael G.; and Tanner, Joseph F., 4,332,707, Cl. 524-476.000.
Uffner, William E., 4,332,705, Cl. 523-206.000.

Oy Wartsila AB: *See*—
Joutsjoki, Jukka, 4,332,192, Cl. 100-168.000.

Ozaki, Masaru: *See*—
Ona, Isao; and Ozaki, Masaru, 4,332,715, Cl. 524-265.000.

Padley & Venables Limited: *See*—
Wormald, Philip J.; and Clemmow, Raymond J., 4,332,502, Cl. 403-343.000.

Page, Jay P.; and Mones, Arthur H., to Honeywell Information Systems Inc. Method of cleaning a fired thick film copper layer. 4,332,624, Cl. 134-3.000.

Paist, H. Palmer; and Jones, Barry M., to Quaker City Manufacturing Company. Block and tackle window sash balance and installation method. 4,332,054, Cl. 16-197.000.

Pako Corporation: *See*—
Kaufmann, Kenneth M., 4,332,456, Cl. 354-298.000.

Palchik, David: *See*—
Blaskowski, Henry J.; and Palchik, David, 4,332,207, Cl. 110-347.000.

Paley, Gary, to Square D Company. Swivel unit for adjustable lighting fixture. 4,333,132, Cl. 362-421.000.

Pallis, Christopher N. Key chain wallet. 4,332,284, Cl. 150-35.000.

Palmai, Gyorgy: *See*—
Noszticzius, Zoltan; Olah, Karoly; Vajta, Zsofia; Palmai, Gyorgy; Patonay, Gabor; and Szommer, Ferenc, 4,332,664, Cl. 204-266.000.

Palmer, William A. Self-contained, compact towable facility having maximized balanced water storage drain water collection and waste water isolation systems. 4,332,040, Cl. 4-300.000.

Palombi, Edward R.; and Vogelman, Joseph H., to Palombi, Edward Rossi; and Vogelman, Joseph Herbert. Cordless telephone. 4,332,981, Cl. 179-2.0EA.

Palombi, Edward Rossi: *See*—
Palombi, Edward R.; and Vogelman, Joseph H., 4,332,981, Cl. 179-2.0EA.

Palsky, Alain; and Vella, Guy, to Rhone Poulenc Textile. Apparatus and process of manufacturing a metal cord. 4,332,131, Cl. 57-213.000.

Pangborn, Jon B.: *See*—
Foh, Stephen E.; Mazumder, Mono M.; and Pangborn, Jon B., 4,332,650, Cl. 204-104.000.

Panton, Stanley, to Milltronics Ltd. Damped acoustic transducers with piezoelectric drivers. 4,333,028, Cl. 310-326.000.

Pape, Georg: *See*—
Kressner, Michael; Kolbe, Joachim; Bremer, Fritz; Pape, Georg; Wolf, Karlheinz; and Kummeler, Ferdinand, 4,332,587, Cl. 8-506.000.

Papez, Stanislav, to Volkswagenwerk Aktiengesellschaft. Camshaft for an internal combustion engine. 4,332,222, Cl. 123-90.170.

Paquette, Edward J.: *See*—
Arora, Mulk R.; Paquette, Edward J.; and McPherson, Allan B., 4,332,652, Cl. 204-129.750.

Pariseau, David L., to Morgan Construction Company. Rolling mill laying pipe. 4,332,155, Cl. 72-66.000.

Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., to Woodland International Corporation. Areal array of tubular electron sources. 4,333,035, Cl. 313-411.000.

Parker-Hannifin Corporation: *See*—
Marietta, Walter E., 4,332,531, Cl. 417-218.000.

Parker, James H. Polypropylene oil removal structure. 4,332,854, Cl. 428-377.000.

Parks, Alvin L.; and McAlexander, W. D., to Chinn, Eldon K. Cultivator device for a vehicle. 4,332,299, Cl. 172-98.000.

Parquet, Donald J.: *See*—
Cochran, Gary L.; and Parquet, Donald J., 4,332,134, Cl. 60-464.000.

Parrott, Richard A.: *See*—
Wyner, Elliot F.; Gutta, John J.; and Parrott, Richard A., 4,333,032, Cl. 313-181.000.

Parsen, Frank E.; and Graham, Teresita O., to Duracell International Inc. Cell having a gelled anode containing a polyhydric alcohol. 4,332,870, Cl. 429-206.000.

Passman, William S.: *See*—
Taylor, Dale F.; Sicko, John S.; and Passman, William S., 4,333,149, Cl. 364-481.000.

Pastien, Eugene R.: *See*—
Kelly, Michael G.; and Pastien, Eugene R., 4,332,326, Cl. 206-497.000.

Pastor, Antonio C.; Pastor, Ricardo C.; Tangonan, Gregory L.; and Wong, Shi-Yin, to Hughes Aircraft Company. Process for depositing a film of controlled composition using a metallo-organic photoresist. 4,332,879, Cl. 430-272.000.

Pastor, Ricardo C.: *See*—
Pastor, Antonio C.; Pastor, Ricardo C.; Tangonan, Gregory L.; and Wong, Shi-Yin, 4,332,879, Cl. 430-272.000.

Patonay, Gabor: *See*—
Noszticzius, Zoltan; Olah, Karoly; Vajta, Zsofia; Palmai, Gyorgy; Patonay, Gabor; and Szommer, Ferenc, 4,332,664, Cl. 204-266.000.

Paul Wurth S.A.: *See*—
Kremer, Victor, 4,332,374, Cl. 266-99.000.

Paulsrude, Douglas M.: *See*—
Drum, Ian; Madenburg, Richard S.; Paulsrude, Douglas M.; Sherman, Carroll H.; Turpin, Frank G.; and Wheatcroft, Gerry A., 4,332,774, Cl. 422-111.000.

Payne, Nicholas S.; Storm, Thomas D.; and Stephens, Theodore C., to Procter & Gamble Company, The. Laundering with a nonionic detergent system at a temperature between the cloud point and the phase coalescence temperatures. 4,332,692, Cl. 252-135.000.

Pazdej, Richard, to Institut de Recherches de la Siderurgie Francaise. Hydrometallurgical treatment of metallurgical dust. 4,332,777, Cl. 423-98.000.

PCA International, Inc.: *See*—
Daignault, Louis G.; and Schiller, Edward E., 4,332,687, Cl. 210-721.000.

Pearce, John W. Paint rollers. 4,332,067, Cl. 29-116.00R.

Pearson, Donald E.: *See*—
Venkataramu, Sindhaghatta D.; Pearson, Donald E.; and Beth, Albert H., 4,332,946, Cl. 546-208.000.

Peek, Hermanus L.; and Collet, Marnix G., to U.S. Philips Corporation. Method of manufacturing a semiconductor device. 4,332,078, Cl. 29-580.000.

Penty, Robert A.: *See*—
LaHaye, Paul G.; Bjerklie, John W.; and Penty, Robert A., 4,332,295, Cl. 165-178.000.

Perdue, Terry A., to Zenith Radio Corporation. Command buffers for electronic code keyer. 4,333,091, Cl. 340-365.00S.

Periana-Pillai, Roy A.: *See*—
Renga, James M.; and Periana-Pillai, Roy A., 4,332,729, Cl. 549-229.000.

Perkin-Elmer Corporation, The: *See*—
Chamran, Morteza M.; Scott, Larkin B.; Williams, Paul B.; and Ford, Michael A., 4,332,470, Cl. 356-325.000.

Pernice, Walter; and Sedlacek, Hans-Harald, to Behringwerke Aktiengesellschaft. Process for immunologic determination tests. 4,332,783, Cl. 424-1.000.

Pernyeszi, Joseph, to International Telephone and Telegraph Corporation. Power source with an electronic impedance changer. 4,333,133, Cl. 363-15.000.

Pestolite, Inc.: *See*—
Schneider, William A., 4,332,100, Cl. 43-113.000.

Peters, Anthony J., to A. O. Smith Harvestore Products, Inc. Agitation system for manure slurry. 4,332,484, Cl. 366-137.000.

Peters, Jeffrey D.: *See*—
Morcom, William R.; Nicolay, Hugh C.; and Peters, Jeffrey D., 4,333,100, Cl. 357-71.000.

Petersen, Wallace C., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,332,611, Cl. 71-92.000.

Peterson, Donald A., to Stoelting Company. Program pacer. 4,333,084, Cl. 346-17.000.

Peterson, Ray D.: *See*—
Cane, Domenick; and Peterson, Ray D., 4,332,642, Cl. 202-173.000.

Petro-Tex Chemical Corporation: *See*—
Christmann, Harold F.; and Miklas, Edward J., 4,332,972, Cl. 585-442.000.

Petrolite Corporation: *See*—
Quinlan, Patrick M., 4,332,799, Cl. 424-246.000.
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,332,967, Cl. 564-162.000.

Peyre-Lavigne, Andre, to Thomson-CSF. Passivation process and structure for self-alignment with the location of a mask. 4,332,837, Cl. 427-57.000.

Pfalzer, Lothar: *See*—
Mauer, Eberhard; Fischer, Siegbert; and Pfalzer, Lothar, 4,332,638, Cl. 162-4.000.

Pfeiffer, Robert W: *See*—
Dean, Robert R.; Mauleon, Jean-Louis; and Pfeiffer, Robert W, 4,332,674, Cl. 208-120.000.
Pfizer, Inc.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,332,942, Cl. 546-240.000.
Schnur, Rodney C., 4,332,952, Cl. 548-226.000.
Philip Morris, Incorporated: *See*—
Edwards, William B., III, 4,332,945, Cl. 546-281.000.
Philipp Holzmann Aktiengesellschaft: *See*—
Krabbe, Wilfried, 4,332,508, Cl. 405-144.000.
Phillips, Bobby M.; Casey, James O., Jr.; and Gregory, Dale R., to Eastman Kodak Company. Process for manufacture of textile filaments and yarns. 4,332,761, Cl. 264-147.000.
Phillips, John D.: *See*—
Griffiths, Mansel W.; Muir, David D.; and Phillips, John D., 4,332,895, Cl. 435-105.000.
Phillips, Peter. Stringed musical instrument having a bridge secured to and translatable along a string. 4,332,184, Cl. 84-173.000.
Phillips Petroleum Company: *See*—
Smith, Dexter E., 4,332,590, Cl. 23-230.00A.
Photodyne, Inc.: *See*—
Wendland, Paul H., 4,332,469, Cl. 356-222.000.
Piepho, Ralf F., to American Colloid Company. Agent for the purification of waste waters and process for its production. 4,332,693, Cl. 252-181.000.
Piesch, Ernst: *See*—
Burgkhardt, Bertram; Konig, Winfried; Piesch, Ernst; and Rober, Hans G., 4,333,013, Cl. 250-461.00R.
Pilkington Brothers Limited: *See*—
Wright, Donald C.; and Simpkin, Gordon T., 4,332,605, Cl. 65-114.000.
Pitney Bowes Inc.: *See*—
Hoffman, Lionel B., 4,332,458, Cl. 355-3.0BE.
Pizzolati, Pier L.: *See*—
Adorni, Napoleone; and Pizzolati, Pier L., 4,332,436, Cl. 350-96.230.
Platz, Gerald M.: *See*—
Fischer, Joseph; and Platz, Gerald M., 4,332,846, Cl. 428-131.000.
Pleska, Jean-Pierre, to Hercules Incorporated. Process for the production of polyolefine-based fibrids, and the fibrids obtained. 4,332,749, Cl. 264-13.000.
Plessey Overseas Limited: *See*—
Bishop, Kenneth W., 4,333,048, Cl. 323-319.000.
Plough, Inc.: *See*—
Kingsford, Ted I., 4,332,494, Cl. 401-5.000.
Plumettaz S.A.: *See*—
Allen, Roger F., 4,332,234, Cl. 124-73.000.
Podlesnykh, Valentina A.: *See*—
Mutalibov, Abdusalam A.; Murashov, Oleg D.; Makhmudov, Takhir M.; Shvartsman, Leonid M.; Deminov, Alexei D.; Podlesnykh, Valentina A.; and Spirin, Lev A., 4,332,486, Cl. 366-146.000.
Pohl, Gerhard: *See*—
Fischer, Wolfgang; Langer, Manfred; and Pohl, Gerhard, 4,332,935, Cl. 536-50.000.
Polak's Frutal Works, B.V.: *See*—
van den Bosch, Steven; van't Land, Evert; and Stoffelsma, Jan, 4,332,829, Cl. 426-535.000.
Polaroid Corporation: *See*—
Corben, Leo D., 4,332,888, Cl. 430-570.000.
Gerber, Arthur M., 4,332,887, Cl. 430-567.000.
Kelly, Charles A.; and Meneghini, Frank A., 4,332,950, Cl. 548-146.000.
Pollard, Jim L.: *See*—
Napier, Loyd S.; and Pollard, Jim L., 4,332,231, Cl. 124-24.00R.
Pollard, Maurice G.; and Sutton, Allan, to British Railways Board. Steering railway vehicle trucks. 4,332,201, Cl. 105-167.000.
Pompon, Jean-Paul: *See*—
Jacquelin, Jean; and Pompon, Jean-Paul, 4,332,866, Cl. 429-50.000.
Ponyik, Charles A., Jr.; and Tobias, Michael A., to Dunlop Limited. Sprayable high solids polyester resin compositions. 4,332,701, Cl. 524-539.000.
Porter, Wilbur A.: *See*—
Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., 4,333,035, Cl. 313-411.000.
Post, Jan, to N.K.F. Groep B.V. Glass fibre cable junction box. 4,332,435, Cl. 350-96.200.
Pouli, Dirk; Melnicki, Leo S.; and Rudd, Eric J., to Hooker Chemicals & Plastics Corp. Electrolytic cell having a depolarized cathode. 4,332,662, Cl. 204-265.000.
Povarov, Leonard S.: *See*—
Emanuel, Nikolai M.; Konovalova, Nina P.; Povarov, Leonard S.; Shapiro, Anatoly B.; Dyachkovskaya, Raisa F.; Suskina, Valentina I.; and Denisova, Ljudmila K., 4,332,934, Cl. 536-6.400.
Powell, John M.: *See*—
Frick, William C.; and Powell, John M., 4,332,429, Cl. 312-236.000.
PPG Industries, Inc.: *See*—
Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., 4,332,861, Cl. 428-520.000.
Hood, Oscar L.; and Lytton, Irvin V., 4,332,626, Cl. 134-11.000.
Jensen, Thomas H., 4,332,602, Cl. 65-12.000.
Schultz, Stephen J.; and Zito, Ronald R., 4,332,607, Cl. 65-182.500.
Scriven, Roger L.; and Chang, Wen-Hsuan, 4,332,329, Cl. 220-2.10A.
Prada, Luis E., to General Electric Company. Household refrigerator including anti-sweat heater control circuit. 4,332,142, Cl. 62-152.000.
Prats, Christian: *See*—
Belval, Michel; Casselman, Chantal; Malet, Jean-Claude; Prats, Christian; and Meneret, Jean, 4,332,170, Cl. 73-40.50R.
Precision Monolithics, Inc.: *See*—
Flink, John A., 4,333,047, Cl. 323-311.000.
President and Fellows of Harvard College: *See*—
Goldstein, Richard N., 4,332,901, Cl. 435-235.000.
Ptashne, Mark; Lauer, Gail D.; Roberts, Thomas M.; and Backman, Keith C., 4,332,892, Cl. 435-68.000.
Presto Lock Company, Division of Walter Kidde & Company, Inc.: *See*—
Remington, Richard C., 4,332,052, Cl. 16-30.000.
Price, Paul F., to RCA Corporation. Mold preparation method. 4,332,841, Cl. 427-135.000.
Priesnitz, Uwe: *See*—
Maurer, Fritz; Riebel, Hans-Jochem; and Priesnitz, Uwe, 4,332,745, Cl. 260-464.000.
Prince, Arvin W., to Harrington Manufacturing Company. Pull type automatic tobacco harvester. 4,332,128, Cl. 56-27.500.
Procter & Gamble Company, The: *See*—
Frohwerk, Arthur E.; and Enting, David E., 4,332,327, Cl. 206-604.000.
Payne, Nicholas S.; Storm, Thomas D.; and Stephens, Theodore C., 4,332,692, Cl. 252-135.000.
Produits Chimiques Ugine Kuhlmann: *See*—
Kervennal, Jacques; Elleuch, Boubaker; and Taarit, Younes B., 4,332,739, Cl. 260-453.0PC.
Propster, Mark A., to Owens-Corning Fiberglas Corporation. Strength improvement of glass batch pellets. 4,332,604, Cl. 65-27.000.
Propster, Mark A.: *See*—
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,332,603, Cl. 65-27.000.
Prost, Maurice; and de Claviere, Michel, to Sanofi. Decahydroquinolinol derivatives and methods of treating cardiac arrythmias or inducing local anaesthesia with them. 4,332,805, Cl. 424-258.000.
Proulx, Richard W.: *See*—
Erickson, Jack A.; Davich, Luke J.; and Proulx, Richard W., 4,332,766, Cl. 264-249.000.
Pryor, John W. Ambulatory patient support stand. 4,332,378, Cl. 272-70.300.
Ptashne, Mark; Lauer, Gail D.; Roberts, Thomas M.; and Backman, Keith C., to President and Fellows of Harvard College. Protein synthesis. 4,332,892, Cl. 435-68.000.
Puissant, Gerald H.: *See*—
Howard, Thomas B.; and Puissant, Gerald H., 4,332,324, Cl. 206-389.000.
Purdue Research Foundation: *See*—
Gong, Cheng-Shung; Chen, Li-Fu; and Tsao, George T., 4,332,903, Cl. 435-254.000.
Whistler, Roy L., 4,332,894, Cl. 435-99.000.
Purex Corporation: *See*—
Schoenmeyr, Ivar L., 4,333,119, Cl. 361-76.000.
Quack, Hans, to Sulzer Brothers Ltd. Refrigerating apparatus. 4,332,136, Cl. 62-54.000.
Quadrivium Techniques Avancees: *See*—
Kalinowski, Richard, 4,333,113, Cl. 360-27.000.
Quaker City Manufacturing Company: *See*—
Paist, H. Palmer; and Jones, Barry M., 4,332,054, Cl. 16-197.000.
Quan, Ronald; and Ryan, John O., to Ampex Corporation. Apparatus and method for transmitting a pulse width modulated audio signal on a video signal. 4,333,108, Cl. 358-145.000.
Quantz, James B., to Machine Design Incorporated. Method of cracking nuts at high production rates. 4,332,827, Cl. 426-481.000.
Quast, Dietrich: *See*—
Kossmehl, Gerhard; Quast, Dietrich; and Schafer, Horst, 4,332,922, Cl. 525-478.000.
Quinlan, Patrick M., to Petrolite Corporation. Quaternaries of tertiary amino-substituted thiazines. 4,332,799, Cl. 424-246.000.
Quinn, Robert L. Colored paving composition. 4,332,620, Cl. 523-220.000.
Quinnell, Geoffrey C., to Marley Tile A.G. Verge and soaker systems. 4,332,117, Cl. 52-94.000.
R. Bialetti & C. S.p.A.: *See*—
Zani, Gian M., 4,332,539, Cl. 425-151.000.
Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., to Blendax-Werke R. Schneider GmbH & Co. Toothpaste active against plaque comprising a copper compound and a silica polishing agent. 4,332,791, Cl. 424-52.000.
Raber, Samuel; and Ellner, Irving L., to Baker Industries, Inc. Intrusion detection system. 4,333,093, Cl. 340-566.000.
Raddatz, Siegfried: *See*—
Boltze, Karl-Heinz; Raddatz, Siegfried; and Seidel, Peter-Rudolf, 4,332,727, Cl. 548-501.000.
Rader, Richard S., to Ajay Enterprises, Inc. Device for supporting and protecting golf clubs. 4,332,283, Cl. 150-1.50R.
Radio Shack: *See*—
Leininger, Steven, 4,333,089, Cl. 340-365.00S.
Radiochemical Centre Limited, The: *See*—
Smith, Geoffrey F. W.; Stevens, Ralph A. J.; and Jacoby, Benjamin, 4,332,784, Cl. 424-1.000.
Raharinosy, Jean-Paul: *See*—
Ribas, Jean-Louis; and Raharinosy, Jean-Paul, 4,332,104, Cl. 46-206.000.

Rahnamai, Hamid: *See*—
Zemel, Jay N.; and Rahnamai, Hamid, 4,332,157, Cl. 73-26.000.

Raikon Research Corporation: *See*—
Zopfy, Rainer K.; Nolan, Robert F.; and Stapf, Carl J., 4,332,355, Cl. 242-56.00R.

Rainear, Dennis H., to Dow Corning Corporation. Composition for coating heat sensitive substrates. 4,332,923, Cl. 525-507.000.

Rait, Joseph M. Particle collector for use with dental suction apparatus. 4,332,560, Cl. 433-92.000.

Rampy, Gordon A.; and Castaneda, Henry B., to Chemetrics, Inc. Disposable titration device. 4,332,769, Cl. 422-75.000.

Rank Xerox Limited: *See*—
Hosomura, Hiroyoshi; Aota, Koichi; and Yoshimura, Eiji, 4,332,851, Cl. 428-325.000.

Ranke, Gerhard; and Siegert, Friedrich, to Linde Aktiengesellschaft. Energy efficient scrubbing of sulfur compounds from moist gaseous mixtures. 4,332,596, Cl. 55-18.000.

Raudenbusch, Werner T.: *See*—
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,332,711, Cl. 523-402.000.

Ray-O-Vac Corporation: *See*—
Margalit, Nehemiah; Joshi, Ashok V.; Aker, Wesley E.; and Johnson, Dennis P., 4,332,869, Cl. 429-194.000.

Raychem Corporation: *See*—
Berejka, Anthony J., 4,332,655, Cl. 204-159.200.
Zingheim, Steven C.; and Lunk, Hans E., 4,332,855, Cl. 428-379.000.

Raytheon Company: *See*—
Collins, John D.; MacFall, Douglas S., Jr.; and Sciarretta, William A., 4,333,080, Cl. 343-17.2PC.

RCA Corporation: *See*—
Butterwick, Gilbert N., 4,333,031, Cl. 313-95.000.
Goodman, Alvin M., 4,333,051, Cl. 324-158.00R.
Hoover, Merle V., 4,333,057, Cl. 330-253.000.
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Hsu, Sheng T., 4,332,077, Cl. 29-571.000.
McGuire, Kenyon E.; and Brokl, Stanley S., 4,333,107, Cl. 358-120.000.
Price, Paul F., 4,332,841, Cl. 427-135.000.
Stewart, Myron C., 4,333,174, Cl. 369-256.000.
Tanguay, Donald J.; and Weitzel, Charles E., 4,333,099, Cl. 357-67.000.
Wittke, James P., 4,332,999, Cl. 219-121.0LJ.

Rector, Stephen W.: *See*—
Jenkins, John P.; Rector, Stephen W.; McCarty, John J.; and Hammond, William, 4,333,096, Cl. 340-684.000.

Redmore, Derek: *See*—
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,332,967, Cl. 564-162.000.

Reed, Roger W. Wiper bar system. 4,332,107, Cl. 47-1.500.

Reenstierna, Erik G. B., to Konsivenior AB. Destruction device for injection needles. 4,332,323, Cl. 206-365.000.

Reese, Eckart: *See*—
Schmidt, Manfred; Wank, Joachim; and Reese, Eckart, 4,332,921, Cl. 525-462.000.

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Reid, Laurence S. Method of removing water from glycol solutions. 4,332,643, Cl. 203-18.000.

Reinehr, Dieter; and Hubele, Adolf, to Ciba-Geigy Corporation. Substituted 11-aminoundecanols. 4,332,969, Cl. 564-460.000.

Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, to Bayer Aktiengesellschaft. Process for spinning hydrophilic acrylic fibres of low density. 4,332,765, Cl. 264-206.000.

Reithner, Gerhard; Wagner, Peter; and Kagerhuber, Franz, to Voest-Alpine Aktiengesellschaft. Starter bar head to be used for casting metal in a continuous casting mould of a continuous casting plant. 4,332,289, Cl. 164-446.000.

Relfexite Corporation: *See*—
Rowland, William P., 4,332,847, Cl. 428-156.000.

Reliance Electric Company: *See*—
Silva, Edmund J., 4,333,095, Cl. 340-679.000.

Remington, Richard C., to Presto Lock Company, Division of Walter Kidde & Company, Inc. Support assembly for luggage. 4,332,052, Cl. 16-30.000.

Renga, James M.; and Periana-Pillai, Roy A., to Dow Chemical Company, The. Preparation of cyclic carbonates. 4,332,729, Cl. 549-229.000.

Renshaw, Governor K. Crosstable X-ray cassette holder. 4,333,014, Cl. 250-521.000.

Rensselear Polytechnic Institute: *See*—
Scarton, Henry A.; and Kennedy, Warren C., 4,332,300, Cl. 173-104.000.

Renth, Ernst-Otto: *See*—
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, 4,332,802, Cl. 424-251.000.

Research Corporation: *See*—
Brownlee, Robert R.; Tyers, G. Frank; and Neff, Paul H., 4,332,256, Cl. 128-419.0PT.

Reusser, Fritz, to Upjohn Company, The. Hybrid plasmid and process of making same. 4,332,898, Cl. 435-172.000.

Revak, Timothy T.: *See*—
Anand, Joginder N.; Revak, Timothy T.; and Rossini, Frank J., 4,332,868, Cl. 429-178.000.

Reyling, George F., to National Semiconductor Corporation. Bubble memory with conductor programmable transparent error map. 4,333,162, Cl. 365-15.000.

Reynard, Remi; Athe, Christian; and Aubert, Jean-Paul, to Coflexip. Riser pipe system for collecting and raising petroleum produced from an underwater deposit. 4,332,509, Cl. 405-168.000.

Reynolds, Christopher C.; Claire, Earl J.; and Ellis, John R., to Harris Corporation. Multiple services system using telephone local loop. 4,332,980, Cl. 179-2.00A.

Rhear, Frances Y. Combination cooker. 4,332,188, Cl. 99-323.500.

Rhoda, Richard N.; and Crosby, Jeffrey N., to MPD Technology Corporation. Preparation of cis-diammine diodo platinum (II). 4,332,780, Cl. 423-413.000.

Rhone Poulenc Textile: *See*—
Palsky, Alain; and Vella, Guy, 4,332,131, Cl. 57-213.000.

Rhonehouse, Donald E. Chain drive mechanism for equipment for heating and cooling workpieces. 4,332,608, Cl. 65-348.000.

Ribas, Jean-Louis; and Raharinosy, Jean-Paul, to Societe Anonyme "Majorette". Clockwork motors for toy vehicles. 4,332,104, Cl. 46-206.000.

Rich Products Corporation: *See*—
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,332,824, Cl. 426-330.300.

Richardson, Howard M., to Dentrex Manufacturing Company. Dental drill control mechanism. 4,332,555, Cl. 433-28.000.

Richter, Jorg: *See*—
Bahre, Karl; Boer, Werner; Richter, Jorg; Seebacher, Gerald; and Warnke, Hans, 4,332,317, Cl. 198-734.000.

Ricketts, William J.: *See*—
Cox, Francis G.; and Ricketts, William J., 4,332,225, Cl. 123-440.000.

Ricoh Company, Ltd.: *See*—
Ebi, Yutaka, 4,333,086, Cl. 346-140.00R.
Sakai, Kiyoshi; Hashimoto, Mitsuru; and Tsutsui, Kyoji, 4,332,948, Cl. 542-417.000.
Tabata, Yasuhiro, 4,332,877, Cl. 430-103.000.
Uji-Ie, Koji; Umehara, Masaakira; Taniguchi, Kiyoshi; and Kunikane, Makoto, 4,332,884, Cl. 430-338.000.

Riebel, Hans-Jochem: *See*—
Maurer, Fritz; Riebel, Hans-Jochem; and Priesnitz, Uwe, 4,332,745, Cl. 260-464.000.

Rieter Machine Works Limited: *See*—
Bischofberger, Juerg; and Wuermli, Arthur, 4,332,059, Cl. 19-244.000.

Rieth, Kurt A.; and Bert, Stephen F., to Textron, Inc. Adjustable bracelet clasp. 4,332,061, Cl. 24-343.000.

Rimedio, Nicholas T., Sr.: *See*—
Hohnerlein, Otto G., Jr.; Smith, Willie E., Jr.; and Rimedio, Nicholas T., Sr., 4,332,622, Cl. 127-41.000.

Rinaldi, Roberto: *See*—
Di Drusco, Giovanni; Rinaldi, Roberto; and Govoni, Gabriele, 4,332,933, Cl. 528-500.000.

Ritzmann, Gotz: *See*—
Ghyczy, Miklos; Erdos, Adorjan; Heidemann, Gunter; and Ritzmann, Gotz, 4,332,795, Cl. 424-199.000.

Rivera, Jose I. Radiant airflow heat processing assembly. 4,333,003, Cl. 219-377.000.

Roach, Charles D., to United States of America, Army. Position transducer. 4,333,066, Cl. 335-206.000.

Rober, Hans G.: *See*—
Burgkhardt, Bertram; Konig, Winfried; Piesch, Ernst; and Rober, Hans G., 4,333,013, Cl. 250-461.00R.

Robert Bosch GmbH: *See*—
Bauer, Otto; Eberl, Leonhard; Geyer, Gerhard; and Straubel, Max, 4,332,227, Cl. 123-502.000.
Hammele, Karl, 4,332,528, Cl. 417-45.000.
Imhof, Ernst; and Schmid, Gunther, 4,332,221, Cl. 123-41.080.
Latsch, Reinhard; and Schlembach, Hans, 4,332,224, Cl. 123-254.000.

Roberts, Michael G.; and Tanner, Joseph F., to Owens-Corning Fiberglas Corporation. Synergistic solvent solution of xylene and stoddard solvent for chemically modified asphalt. 4,332,707, Cl. 524-476.000.

Roberts, Michael G.: *See*—
Marzocchi, Alfred; Roberts, Michael G.; Bolen, Charles E.; and Harrington, Edward R., 4,332,704, Cl. 523-203.000.

Roberts, Thomas M.: *See*—
Ptashne, Mark; Lauer, Gail D.; Roberts, Thomas M.; and Backman, Keith C., 4,332,892, Cl. 435-68.000.

Rockwell International Corporation: *See*—
Boros, Lawrence A., 4,332,998, Cl. 219-107.000.
Clark, Paul R., 4,332,430, Cl. 339-17.00C.

Rodriguez, Gonzalo C. Combination toothbrush and toothpaste dispenser. 4,332,497, Cl. 401-154.000.

Roesler, Helmut: *See*—
Bigall, Klaus D.; and Roesler, Helmut, 4,333,159, Cl. 364-900.000.

Rogers, Robert C.: *See*—
Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., 4,333,035, Cl. 313-411.000.

Roggenburg, Stanley L., Jr.; and Tully, Michael E., to Essex Chemical Corporation. Blow-molding and degating hollow shapes. 4,332,750, Cl. 264-23.000.

Rohm, Gunter H. Hydraulic actuator for lathe chuck. 4,332,186, Cl. 91-1.000.

Rohr, Eduard, to Eduard Rohr AG. Throttling device for pipe conduits. 4,332,271, Cl. 137-315.000.

Rolls-Royce Limited: *See—*
Ballard, Norman E., 4,332,618, Cl. 106-84.000.
Crooke, Peter A.; and Galliimore, Kenneth, 4,332,753, Cl. 264-44.000.
Sargent, Raymond F.; and Hall, John M., 4,332,427, Cl. 308-9.000.
Rosenberg, Ralph A. Process for the production of an insulin-producing cell line of pancreatic beta cells. 4,332,893, Cl. 435-68.000.
Rosener, Wolfgang: *See—*
Gerlach, Klaus; Behnke, Joachim; Rosener, Wolfgang; and Hohm, Ewald, 4,332,686, Cl. 210-651.000.
Rosenthal Technik AG: *See—*
Bock, Peter, 4,332,913, Cl. 501-144.000.
Rossini, Frank J.: *See—*
Anand, Joginder N.; Revak, Timothy T.; and Rossini, Frank J., 4,332,868, Cl. 429-178.000.
Rottenkolber, John J.: *See—*
Rudnick, Jack Z.; Okonski, Edward B.; and Rottenkolber, John J., 4,332,055, Cl. 16-335.000.
Roussel Uclaf: *See—*
Guillaume, Jacques; Nedelec, Lucien; Dumont, Claude; and Fournex, Robert, 4,332,808, Cl. 424-263.000.
Rowland, William P., to Relfexite Corporation. Method for compression molding of retroreflective sheeting and sheeting produced thereby. 4,332,847, Cl. 428-156.000.
Rozsa, Laszlo: *See—*
Fischer, Janos; Rozsa, Laszlo; Vago, Pal; Bakonyi, Anna; and Fazekas, Gabor, 4,332,725, Cl. 548-533.000.
RPC Industries: *See—*
Farrell, Sherman R., 4,333,036, Cl. 313-420.000.
Rubner, Roland: *See—*
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,332,882, Cl. 430-322.000.
Ahne, Hellmut; Kuhn, Eberhard; Rubner, Roland; and Schmidt, Erwin, 4,332,883, Cl. 430-322.000.
Rudd, Eric J.: *See—*
Pouli, Dirk; Melnicki, Leo S.; and Rudd, Eric J., 4,332,662, Cl. 204-265.000.
Rudnick, Jack Z.; Okonski, Edward B.; and Rottenkolber, John J. Hinge with a spring arm catch. 4,332,055, Cl. 16-335.000.
Ruger, James F.: *See—*
Aberle, Claus; Ruger, James F.; and Schulz, Klaus-Peter, 4,332,168, Cl. 374-130.000.
Ruminsky, Robert T.: *See—*
Mueller, Dale A.; Ruminsky, Robert T.; Serber, Stephen L.; and Wolfgram, Rodger C., 4,332,141, Cl. 62-140.000.
Rusing, Bernd: *See—*
Neidecker, Rudolf; and Rusing, Bernd, 4,332,434, Cl. 339-258.00R.
Russell, John: *See—*
Gasser, Clive G.; and Russell, John, 4,332,743, Cl. 562-512.200.
Rust, Norbert, to Expert Automation, Inc. Mechanical motion control apparatus. 4,332,176, Cl. 74-110.000.
Rust, Robert R., to Universal Foods Corporation. Method of preparing salted cheese curd loaves. 4,332,831, Cl. 426-582.000.
Rutchik, Walter L.: *See—*
Hayden, John E.; and Rutchik, Walter L., 4,333,122, Cl. 361-114.000.
Rutgerswerke Aktiengesellschaft: *See—*
Orth, Winfried; Lange, Fritz W.; and Fickert, Werner, 4,332,728, Cl. 548-519.000.
Ruti-Te Strake B.V.: *See—*
Manders, Petrus G. J., 4,332,280, Cl. 139-435.000.
Ryan, Daniel F.: *See—*
Bauman, Richard F.; and Ryan, Daniel F., 4,332,666, Cl. 208-8.0LE.
Ryan, John O.: *See—*
Quan, Ronald; and Ryan, John O., 4,333,108, Cl. 358-145.000.
Ryu, Toshihiko; and Koizumi, Yutaka, to Nippon Electric Co., Ltd. Amplitude equalizer. 4,333,063, Cl. 333-18.000.
Sabel, Gustav; and Schellens, Horst, to Ford Motor Company. Reverse speed shift device for a motor vehicle change-speed gearbox. 4,332,312, Cl. 192-4.00C.
Safeguard Business Systems, Inc.: *See—*
Hayman, Eric R., 4,332,400, Cl. 282-3.00A.
Safford, Laurance F., to American Standard Inc. Teletypewriter privacy system. 4,332,977, Cl. 178-22.140.
Saint-Gobain Industries: *See—*
Meunier, Jean P.; Barthe, Marie P.; Have, Serge; and Frumen, Bernard, 4,332,754, Cl. 264-45.500.
Saito, Kazuyoshi: *See—*
Iida, Taketoshi; Saito, Kazuyoshi; Shrasaka, Toshio; and Takemura, Yasuhiko, 4,332,171, Cl. 73-626.000.
Saito, Narimasa: *See—*
Nakano, Eiichi; Saito, Narimasa; and Fukushima, Danji, 4,332,897, Cl. 435-172.000.
Saitoh, Akira; Yamori, Akio; and Ibaragi, Toshio, to Asahi Kasei Kogyo Kabushiki Kaisha. Multi-layer laminate comprising a modified styrene-butadiene block copolymer. 4,332,858, Cl. 428-412.000.
Sakai, Kiyoshi; Hashimoto, Mitsuru; and Tsutsui, Kyoji, to Ricoh Company, Ltd. Novel hydrazone compounds and process for preparing the same. 4,332,948, Cl. 542-417.000.
Sakamaki, Hisashi: *See—*
Yagasaki, Toshiaki; Masuda, Shunichi; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,332,462, Cl. 355-14.00R.
Sakamoto, Kohichiro: *See—*
Suzuki, Seiji; Sakamoto, Kohichiro; and Kitagawa, Tohru, 4,332,174, Cl. 73-862.650.
Sakane, Kazuo: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,332,798, Cl. 424-246.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,332,800, Cl. 424-246.000.
Sakashita, Nobuyuki: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,332,961, Cl. 560-62.000.
Sakiyama, Kazuo: *See—*
Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, 4,332,859, Cl. 428-412.000.
Salice, Luciano, to Deutsche Salice GmbH. Concealed hinge for doors, flaps, or the like. 4,332,053, Cl. 16-370.000.
Salzle, Erich. Method of polishing glass ware with sulfuric acid and hydrofluoric acid. 4,332,649, Cl. 204-98.000.
Samejima, Hiroshi; Miura, Mareki; and Onuma, Yoshinobu, to Mitsubishi Petrochemical Co., Ltd. Process for liquefying acid anhydride. 4,332,733, Cl. 549-240.000.
Samuel, Richard I., to Jayem Dialer Corp. Automatic calling methods and apparatus. 4,332,985, Cl. 179-90.0BD.
Sanders Associates, Inc.: *See—*
Misek, Victor A., 4,333,008, Cl. 250-225.000.
Sandhu, Taljit S.: *See—*
Bicher, James I.; Sandhu, Taljit S.; and Hetzel, Fred W., 4,332,260, Cl. 128-804.000.
Sandiford, Burton B., to Union Oil Company of California. Selectively controlling fluid flow through the higher permeability zones of subterranean reservoirs. 4,332,297, Cl. 166-270.000.
Sandstrom, Erland T.: *See—*
Stenberg, Johan E.; Stiblert, Lars B.; and Sandstrom, Erland T., 4,332,476, Cl. 356-369.000.
Sangamo Weston, Inc.: *See—*
Kishel, Joseph F., 4,333,068, Cl. 338-158.000.
Sankyo Company Limited: *See—*
Arai, Mamoru; Torikata, Akio; Enokita, Ryuzou; Haneishi, Tatsuo; and Nakajima, Mutsuo, 4,332,902, Cl. 435-253.000.
Sankyo Electric Company Limited: *See—*
Terauchi, Kiyoshi; and Hiraga, Masaharu, 4,332,535, Cl. 418-55.000.
Sanofi: *See—*
Prost, Maurice; and de Claviere, Michel, 4,332,805, Cl. 424-258.000.
Santerre, George M.: *See—*
Conyers, John A.; Oberth, Adolph E.; and Santerre, George M., 4,332,632, Cl. 149-19.200.
Sargent, Raymond F.; and Hall, John M., to Rolls-Royce Limited. Air bearing for use with concentric rotary shafts in machines. 4,332,427, Cl. 308-9.000.
Sartoretto, Paul; and Tao, Kak-Yuen, to W. A. Cleary Chemical Corporation. Urea formaldehyde dispersions modified with higher aldehydes. 4,332,610, Cl. 71-28.000.
Sasatani, Yukihiro, to Sumitomo Electric Industries, Ltd. Terraced substrate semiconductor laser. 4,333,061, Cl. 372-46.000.
Sater, Bernard L. High intensity solar cell. 4,332,973, Cl. 136-246.000.
Sato, Hisaaki, to Nippon Electric Co., Ltd. Traveling wave tube devices. 4,333,038, Cl. 315-3.500.
Sato, Hisao. Spring clip for holding sheets of paper or the like. 4,332,060, Cl. 24-67.900.
Sato, Masatoshi, to Canon Kabushiki Kaisha. Flatness measuring apparatus. 4,332,477, Cl. 356-371.000.
Sato, Yoshinori: *See—*
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.
Satoh, Shinzoh. Method of nitriding by high temperature electrolysis. 4,332,653, Cl. 204-140.000.
Satomi, Kunio: *See—*
Uehara, Haruo; and Satomi, Kunio, 4,332,706, Cl. 523-450.000.
Saulgeot, Claude, to Societe Anonyme dite Compagnie Industrielle des Telecommunications Cit-Alcatel. Hard vacuum pump. 4,332,522, Cl. 415-90.000.
SAVA KRANJ Industrija gumijevih, usnjenih in kemicnih izdelkov n.o.sol.o.: *See—*
Munih, Pavel, 4,332,700, Cl. 204-155.000.
Savannah Foods & Industries, Inc.: *See—*
Hohnerlein, Otto G., Jr.; Smith, Willie E., Jr.; and Rimedio, Nicholas T., Sr., 4,332,622, Cl. 127-41.000.
Sawada, Satoru: *See—*
Aoki, Kozo; Kojima, Tetsuro; Furutachi, Nobuo; and Sawada, Satoru, 4,332,886, Cl. 430-551.000.
Sawamura, Hitoshi: *See—*
Uchida, Kanich; and Sawamura, Hitoshi, 4,332,573, Cl. 474-94.000.
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Cooney, Charles L.; and Schaefer, Eugene J., 4,332,899, Cl. 435-172.000.
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Kossmehl, Gerhard; Quast, Dietrich; and Schafer, Horst, 4,332,922, Cl. 525-478.000.
Schaper, Helmut: *See—*
Kurland, Heinrich; Schaper, Helmut; and Schueller, Joachim, 4,332,621, Cl. 127-19.000.
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Lutz, Alfons; Schatzler, Walter; Jardin, Hans; Sielk, Werner; and Frank, Julius, 4,332,416, Cl. 296-216.000.

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Sabel, Gustav; and Schellens, Horst, 4,332,312, Cl. 192-4.00C.
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Hughes, Norman E.; and Scheve, Bernard J., 4,332,873, Cl. 430-15.000.
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Singh, Anand P.; and Schichman, Daniel, 4,332,536, Cl. 425-33.000.
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Daignault, Louis G.; and Schiller, Edward E., 4,332,687, Cl. 210-721.000.
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Imhof, Ernst; and Schmid, Gunther, 4,332,221, Cl. 123-41.080.
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Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, 4,332,970, Cl. 568-319.000.
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Schneider, Klaus: *See*—
Luedemann, Heinz; and Schneider, Klaus, 4,332,339, Cl. 226-195.000.
Schneider, William A., to Pestolite, Inc. Flying insect trap. 4,332,100, Cl. 43-113.000.
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Schoenmeyr, Ivar L., to Purex Corporation. Power monitor system. 4,333,119, Cl. 361-76.000.
Schoettle, Klaus; Kaemmer, Eduard; Dobler, Peter; Gliniorz, Lothar; and Hoffmann, Werner, to BASF Aktiengesellschaft. Positioning device for a magnetic head of a magnetic tape recorder. 4,333,116, Cl. 360-78.000.
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Schopper, Bernd; and Tandler, Peter, to ITT Industries, Inc. Two-circuit pressure control unit. 4,332,423, Cl. 303-22.00R.
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Schmitt, Alfred; and Schorer, Gerd, 4,332,627, Cl. 148-1.500.
Schrenk, Alfred: *See*—
Sozzi, Tomaso; Schrenk, Alfred; and Buhler, Marcel, 4,332,790, Cl. 424-38.000.
Schreurs, Gerardus C. M.: *See*—
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,332,711, Cl. 523-402.000.
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Fugner, Armin, to Boehringer Ingelheim KG. 11-Oxo-11H-pyrido[2,1-b]quinazoline-2-carboxylic acid and salts thereof, antiallergic compositions containing it and methods of suppressing allergic reactions with it. 4,332,802, Cl. 424-251.000.
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Kurland, Heinrich; Schaper, Helmut; and Schueller, Joachim, 4,332,621, Cl. 127-19.000.
Schuit, Johannes. Double intake, supercharging I.C. engine. 4,332,229, Cl. 123-65.00B.
Schultz, Stephen J.; and Zito, Ronald R., to PPG Industries, Inc. Overhead mechanism for flat glass forming tweel. 4,332,607, Cl. 65-182.500.
Schulz, Johann G. D.; and Cobler, John A., to Gulf Research & Development Company. Hydrocarbon emulsions. 4,332,695, Cl. 252-312.000.
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Aberle, Claus; Ruger, James F.; and Schulz, Klaus-Peter, 4,332,168, Cl. 374-130.000.
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Trosken, Jurgen; Horlein, Gerhard; Schulze, Ernst-Friedrich; and Langeluddeke, Peter, 4,332,960, Cl. 560-62.000.
Schulze, Heinz; Zimmerman, Robert L.; and Waddill, Harold G., to Texaco Development Corporation. N,N'-Polyoxyalkylene bis(lactam carboxylic acids). 4,332,720, Cl. 260-239.30R.
Schuss, Werner; and Fleer, Ernst-Otto, to Siemens Aktiengesellschaft. Dental handpiece. 4,332,562, Cl. 433-126.000.
Schwan-Stabilo Schwanhausser GmbH & Co.: *See*—
Hempel, Matthias; and Bruchert, Werner, 4,332,763, Cl. 264-176.00R.
Schwarz, Alfred O., to Bell Telephone Laboratories, Incorporated. Fused station protector. 4,333,121, Cl. 361-104.000.
Schwarz, Francisc C. Four quadrant AC and DC to AC and DC converter with two or more independently controlled loads. 4,333,135, Cl. 363-28.000.
Schwarz, Frederick M.; Griffin, James G.; and Gudaitus, Vytautis P., to United Technologies Corporation. Compressor bleed system for cooling and clearance control. 4,332,133, Cl. 60-39.750.
Schwarz, Rudolf, to Staeubli Ltd. Connecting rod between the heddle frame of a weaving machine and the heddle frame actuating device of the shed-forming machine which controls same. 4,332,279, Cl. 139-82.000.
Sciarretta, William A.: *See*—
Collins, John D.; MacFall, Douglas S., Jr.; and Sciarretta, William A., 4,333,080, Cl. 343-17.2PC.
Scott & Fetzer Company, The: *See*—
Lee, Maw H., 4,333,046, Cl. 323-231.000.
Scott, Larkin B.: *See*—
Chamran, Morteza M.; Scott, Larkin B.; Williams, Paul B.; and Ford, Michael A., 4,332,470, Cl. 356-325.000.
Scripto, Inc.: *See*—
Fuller, David L., 4,332,549, Cl. 431-344.000.
Scriven, Roger L.; and Chang, Wen-Hsuan, to PPG Industries, Inc. Implosion coatings. 4,332,329, Cl. 220-2.10A.
Searight, Charles E.; and Heasley, James H., to Ferro Corporation. Retroreflective marking tape. 4,332,437, Cl. 350-103.000.
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Bernini, Giuseppe, 4,332,721, Cl. 260-239.570.
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Pernice, Walter; and Sedlacek, Hans-Harald, 4,332,783, Cl. 424-1.000.
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Bahre, Karl; Boer, Werner; Richter, Jorg; Seebacher, Gerald; and Warnke, Hans, 4,332,317, Cl. 198-734.000.
Seeberger, Ernst: *See*—
Wegerhoff, Arno; Zengel, Hans; Brodowski, Walter; Beck, Heinz; Seeberger, Ernst; Steenken, Gerhard; and Hillermeider, Karlheinz, 4,332,600, Cl. 65-2.000.
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Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,332,711, Cl. 523-402.000.
Seely, Neil G.; and Smart, David C., to Eastman Kodak Company. Film loading apparatus. 4,332,453, Cl. 354-288.000.
Seide, Leonard: *See*—
Forgue, John R.; Goldberg, Joshua I.; and Seide, Leonard, 4,333,004, Cl. 219-497.000.
Seidel, Peter-Rudolf: *See*—
Boltze, Karl-Heinz; Raddatz, Siegfried; and Seidel, Peter-Rudolf, 4,332,727, Cl. 548-501.000.
Seifert, Gottfried; and Staubli, Sebastian, to Ciba-Geigy AG. Process for the preparation of fluorinated s-triazines. 4,332,939, Cl. 544-217.000.
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Sotomura, Tadashi; Sekido, Satoshi; Morigaki, Ken'Ichi; Okazaki, Ryoji; and Nakai, Muneaki, 4,332,865, Cl. 429-48.000.
Seligman, Paul A.: *See*—
Allen, Robert H.; and Seligman, Paul A., 4,332,785, Cl. 424-1.000.
Seng, Stephen: *See*—
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,332,603, Cl. 65-27.000.
Serber, Stephen L.: *See*—
Mueller, Dale A.; Ruminsky, Robert T.; Serber, Stephen L.; and Wolfgram, Rodger C., 4,332,141, Cl. 62-140.000.
Serck Industries, Limited: *See*—
Williams, William F., 4,332,370, Cl. 251-214.000.
Shah, Naresh R., to Union Carbide Corporation. Polymer/polyisocyanate compositions, processes for making same and processes for making polyurethane products therefrom. 4,332,716, Cl. 521-137.000.
Shankoff, Theodore A., to Bell Telephone Laboratories, Incorporated. Resist adhesion in integrated circuit processing. 4,332,881, Cl. 430-311.000.

Shapiro, Anatoly B.: *See—*
Emanuel, Nikolai M.; Konovalova, Nina P.; Povarov, Leonard S.; Shapiro, Anatoly B.; Dyachkovskaya, Raisa F.; Suskina, Valentina I.; and Denisova, Ljudmila K., 4,332,934, Cl. 536-6.400.

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Mitsuyama, Akira; Kawano, Tadaaki; Kato, Tutomu; Deguchi, Masanobu; and Katoh, Ituro, 4,332,457, Cl. 355-3.0FU.

Shaw, David N. Bottoming cycle refrigerant scavenging for positive displacement compressor, refrigeration and heat pump systems. 4,332,144, Cl. 62-324.100.

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Kooijmans, Petrus G.; Kunze, Wolfgang; and Noordam, Arend, 4,332,709, Cl. 523-416.000.
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,332,711, Cl. 523-402.000.
Kramer, Petrus A., 4,332,730, Cl. 549-302.000.
Lieder, Charles A.; and Deal, Carl H., 4,332,781, Cl. 423-573.00G.
Lijzenga, Jan; Van Gooswilligen, Gerrit; and Blanken, Thomas C., 4,332,703, Cl. 524-68.000.

Shellhause, Ronald L., to General Motors Corporation. Quick connect hydraulic coupling assembly. 4,332,402, Cl. 285-86.000.

Sherman, Carroll H.: *See—*
Drum, Ian; Madenburg, Richard S.; Paulsrude, Douglas M.; Sherman, Carroll H.; Turpin, Frank G.; and Wheatcroft, Gerry A., 4,332,774, Cl. 422-111.000.

Sherwood Medical Industries, Inc.: *See—*
Joslin, Joel A., 4,332,249, Cl. 128-218.0NV.

Shibahara, Jun; and Matsumura, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Built-in type microwave oven. 4,332,993, Cl. 219-10.55R.

Shick, Lloyd G.: *See—*
Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., 4,332,861, Cl. 428-520.000.

Shigemura, Yutaka: *See—*
Kimura, Hiroshi; Matsui, Toshikazu; Hisajima, Masahiko; Shigemura, Yutaka; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,332,467, Cl. 355-14.00D.

Shimaoka, Goro: *See—*
Taniyama, Susumu; and Shimaoka, Goro, 4,332,857, Cl. 428-412.000.

Shimauchi, Yoshinori: *See—*
Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, 4,332,859, Cl. 428-412.000.

Shimizu, Akihiko, to Japax Inc. Apparatus for making hollow extrusion dies. 4,333,000, Cl. 219-69.00W.

Shimizu, Katsuichi: *See—*
Yagasaki, Toshiaki; Masuda, Shunichi; Shimizu, Katsuichi; and Sakamaki, Hisashi, 4,332,462, Cl. 355-14.00R.

Shimizu, Masajiro: *See—*
Yamazaki, Susumu; Nagoya, Yoshinari; and Shimizu, Masajiro, 4,332,146, Cl. 62-353.000.

Shinkai, Hiroyuki: *See—*
Mochida, Ei; Shinkai, Hiroyuki; Kudo, Takashi; and Sugawara, Toshiyuki, 4,332,788, Cl. 424-12.000.

Shinpo Kogyo Kabushiki Kaisha: *See—*
Matsui, Norio, 4,332,542, Cl. 425-459.000.

Shioda, Katashi: *See—*
Ando, Masao; Hirota, Tetsuya; and Shioda, Katashi, 4,332,623, Cl. 127-46.200.

Shionogi & Co., Ltd.: *See—*
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,332,722, Cl. 260-245.400.

Shirazawa, Haruhiro: *See—*
Ota, Isao; Shirazawa, Haruhiro; Tatsumichi, Toshio; Kawarada, Hiroshi; and Ohtsuka, Tetsuro, 4,332,075, Cl. 29-571.000.

Shrasaka, Toshio: *See—*
Iida, Taketoshi; Saito, Kazuyoshi; Shrasaka, Toshio; and Takemura, Yasuhiko, 4,332,171, Cl. 73-626.000.

Shulman, Leon, to Life-Like Products, Inc. Model aircraft glider. 4,332,103, Cl. 46-81.000.

Shvartsman, Leonid M.: *See—*
Mutalibov, Abdusalam A.; Murashov, Oleg D.; Makhmudov, Takhir M.; Shvartsman, Leonid M.; Deminov, Alexei D.; Podlesnykh, Valentina A.; and Spirin, Lev A., 4,332,486, Cl. 366-146.000.

Sicko, John S.: *See—*
Taylor, Dale F.; Sicko, John S.; and Passman, William S., 4,333,149, Cl. 364-481.000.

Siegert, Friedrich: *See—*
Ranke, Gerhard; and Siegert, Friedrich, 4,332,596, Cl. 55-18.000.

Sielk, Werner: *See—*
Lutz, Alfons; Schatzler, Walter; Jardin, Hans; Sielk, Werner; and Frank, Julius, 4,332,416, Cl. 296-216.000.

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Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,332,882, Cl. 430-322.000.
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Bigall, Klaus D.; and Roesler, Helmut, 4,333,159, Cl. 364-900.000.
Heinicke, Harald, 4,333,140, Cl. 363-27.000.
Schuss, Werner; and Fleer, Ernst-Otto, 4,332,562, Cl. 433-126.000.

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Ganz, Jorg, 4,332,200, Cl. 104-12.000.

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Silva, Edmund J., to Reliance Electric Company. Brush wear indicator. 4,333,095, Cl. 340-679.000.

Silver, Alexander, to Garrett Corporation, The. Method of making rotor rectangularly shaped tongues. 4,332,079, Cl. 29-598.000.

Silvon, Michael P.: *See—*
Watson, James W., Jr.; Silvon, Michael P.; and Lobo, Brian J., 4,332,747, Cl. 260-986.000.

Simon Container Machinery Limited: *See—*
Johnson, Frederick P., 4,332,579, Cl. 493-325.000.

Simone, Dominic, to CasChem, Inc. Catalyst-containing stable polyurethane forming compositions which are non-cytotoxic when cured and separatory devices employing same. 4,332,927, Cl. 528-58.000.

Simons, Craig W.: *See—*
Barkus, Lee A.; and Simons, Craig W., 4,332,849, Cl. 428-188.000.

Simpkin, Gordon T.: *See—*
Wright, Donald C.; and Simpkin, Gordon T., 4,332,605, Cl. 65-114.000.

Singer, Edouard. Hoisting device. 4,332,372, Cl. 254-391.000.

Singh, Anand P.; and Schichman, Daniel, to NRM Corporation. Hydraulic tire press. 4,332,536, Cl. 425-33.000.

Singh, Shobha: *See—*
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Levinstein, Hyman J.; Murarka, Shyam P.; and Sinha, Ashok K., 4,332,839, Cl. 427-85.000.

Sinha, Brajnandan; and Tiberg, Sven-Erik, to Sinha, Brajnandan. Device for eliminating the vehicle wheel locking risk at braking. 4,333,146, Cl. 364-426.000.

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Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.

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Grozinger, Gerhard, 4,332,150, Cl. 66-232.000.

Six, Rudolph E., to Almo Manifold & Tool Co. Electrical control circuit for controlling a D.C. solenoid. 4,333,043, Cl. 318-591.000.

Skala, Stephen F. Apparatus for rapid heat transfer and efficient heat storage. 4,332,290, Cl. 165-10.000.

Skrypek, John P.; Williams, Robert; and Dominico, James W., to Sun Chemical Corporation. Cup-stack delivery mechanism. 4,332,316, Cl. 198-425.000.

Slepcevic, Dusan. Encapsulation mold with removable cavity plates. 4,332,537, Cl. 425-121.000.

Sletten, Harold L.: *See—*
Crosgrove, Robert O.; Moody, Edward; and Sletten, Harold L., 4,332,639, Cl. 376-253.000.

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Dalton, Charles A.; and Slinkard, William E., 4,332,971, Cl. 568-480.000.

Slovinsky, Manuel; and Maciaszek, Joseph A., to Nalco Chemical Company. Fatty epoxide hydrophobized silica as antifoams in brownstock washing aids. 4,332,696, Cl. 252-321.000.

Slysh, Paul, to General Dynamics Corporation. Structural node for large space structures. 4,332,501, Cl. 403-219.000.

Smart, David C.: *See—*
Seely, Neil G.; and Smart, David C., 4,332,453, Cl. 354-288.000.

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Jesme, Philip O., 4,332,212, Cl. 118-202.000.

Smith, Alan M.: *See—*
Owen, Daniel V.; and Smith, Alan M., 4,333,139, Cl. 363-97.000.

Smith, Charles M. Apparatus for mechanically extracting fish roe. 4,332,057, Cl. 17-55.000.

Smith, Dexter E., to Phillips Petroleum Company. Reactor control. 4,332,590, Cl. 23-230.00A.

Smith, Eugene P. Bowling aid. 4,332,382, Cl. 273-54.00B.

Smith, Geoffrey F. W.; Stevens, Ralph A. J.; and Jacoby, Benjamin, to Radiochemical Centre Limited, The. Dual isotope assays. 4,332,784, Cl. 424-1.000.

Smith, George R., to General Motors Corporation. Inflatable restraint system. 4,332,398, Cl. 280-732.000.

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Smith, Raymond, to Teledyne Industries, Inc. Turbine shroud assembly. 4,332,523, Cl. 415-126.000.

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Smith, Willie E., Jr.: *See—*
Hohnerlein, Otto G., Jr.; Smith, Willie E., Jr.; and Rimedio, Nicholas T., Sr., 4,332,622, Cl. 127-41.000.

Smura, Edwin J.: *See—*
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., 4,332,464, Cl. 355-14.00C.

Societe Anonyme dite: Compagnie Generale D'Electricite: *See—*
Jacquelin, Jean; and Pompon, Jean-Paul, 4,332,866, Cl. 429-50.000.

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Saulgeot, Claude, 4,332,522, Cl. 415-90.000.

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Dufrancatel, Michel, 4,332,115, Cl. 52-66.000.
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Ribas, Jean-Louis; and Raharinosy, Jean-Paul, 4,332,104, Cl. 46-206.000.
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Sozzi, Tomaso; Schrenk, Alfred; and Buhler, Marcel, 4,332,790, Cl. 424-38.000.
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Van de Caveye, Yves H., 4,332,540, Cl. 425-182.000.
Sodomsky, Kenneth F.: *See—*
Davis, Paul C.; Jackson, Raymond G.; Sodomsky, Kenneth F.; and Whitson, Dennis L., 4,332,984, Cl. 179-81.00R.
Soecknick, Erhard; and Busse, Jurgen, to Messer Griesheim GmbH. Device for cooling a gas to below its dew point. 4,332,143, Cl. 62-284.000.
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Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,332,961, Cl. 560-62.000.
Sommer, Werner: *See—*
Thamm, Horst-Dieter; Knittel, Volker; Sommer, Werner; and Weckler, Gerhard, 4,332,746, Cl. 260-932.000.
Sony Corporation: *See—*
Ohgoshi, Akio; Nakayama, Akira; Tsukamura, Yoshihiro; and Natori, Takehisa, 4,333,034, Cl. 313-407.000.
Takei, Yutaka, 4,332,834, Cl. 427-48.000.
Sorathia, Usman A. K.: *See—*
Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,332,656, Cl. 204-159.140.
Sorenson, Roderick J.: *See—*
Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., 4,332,947, Cl. 546-284.000.
Sotchenko, Vladimir P.: *See—*
Dudko, Daniil A.; Mozzhukhin, Anatoly A.; Sotchenko, Vladimir P.; and Maximovich, Boleslav I., 4,332,997, Cl. 219-9.500.
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Sutherland, Hugh E.; Spiegelhalter, Philip J.; Spiegelhalter, Martin R.; and Goring, Brian H., 4,333,074, Cl. 340-825.300.
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Speicher, Wolfgang: *See—*
Heins, Ferdinand; and Speicher, Wolfgang, 4,332,860, Cl. 428-473.000.
Spencer, Robert A.: *See—*
Balde, John W.; Spencer, Robert A.; and Thompson, Richard K., Jr., 4,332,433, Cl. 339-99.00R.
Sperry Corporation: *See—*
De Busscher, Cyriel R. J., 4,332,262, Cl. 130-27.00P.
Susman, Leon, 4,333,082, Cl. 343-754.000.
Webster, E. Graham, 4,332,261, Cl. 130-27.00R.
Spiegelhalter, Martin R.: *See—*
Sutherland, Hugh E.; Spiegelhalter, Philip J.; Spiegelhalter, Martin R.; and Goring, Brian H., 4,333,074, Cl. 340-825.300.
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Sutherland, Hugh E.; Spiegelhalter, Philip J.; Spiegelhalter, Martin R.; and Goring, Brian H., 4,333,074, Cl. 340-825.300.
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Spies, Johann: *See—*
Dalstein, Rolf; Spies, Johann; Greif, Hans-Dieter; Termath, Gunter; Unbescheid, Jurgen; and Nowoczyn, Hans-Werner, 4,332,241, Cl. 126-450.000.
Spirin, Lev A.: *See—*
Mutalibov, Abdusalam A.; Murashov, Oleg D.; Makhmudov, Takhir M.; Shvartsman, Leonid M.; Deminov, Alexei D.; Podlesnykh, Valentina A.; and Spirin, Lev A., 4,332,486, Cl. 366-146.000.
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Sprague Electric Company: *See—*
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Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Acetyl hydrindacenes, acetyl indanes, mixtures of same, processes for preparing same and organoleptic uses thereof. 4,332,970, Cl. 568-319.000.
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Square D Company: *See—*
Paley, Gary, 4,333,132, Cl. 362-421.000.
Stachowicz, Edward, to BMS Roasting Equipment Corporation. Combination fork. 4,332,409, Cl. 294-2.000.
Stack, William F.: *See—*
Jacko, John; and Stack, William F., 4,332,085, Cl. 33-143.00R.
Staeubli Ltd.: *See—*
Schwarz, Rudolf, 4,332,279, Cl. 139-82.000.
Stafford, Scott L.: *See—*
Gilligan, William H.; and Stafford, Scott L., 4,332,744, Cl. 260-463.000.
Staiert, Richard W.; and Krukow, Eugene J., to International Harvester Co. Combine feeder drive control. 4,332,127, Cl. 56-10.200.
Stana, Regis R., to Wyoming Mineral Corporation. Extractant solvent restoration in the process for recovery of uranium from phosphoric acid. 4,332,776, Cl. 423-10.000.
Standard Oil Company (Indiana): *See—*
Ott, Louis E., 4,332,609, Cl. 71-27.000.
Stanley Electric Co., Ltd.: *See—*
Hujimoto, Yoshio; Kochi, Tadashi; and Furuya, Shigeru, 4,333,131, Cl. 362-372.000.
Staodynamics, Inc.: *See—*
Thomson, Thomas H., 4,332,246, Cl. 128-214.00F.
Stapf, Carl J.: *See—*
Zopfy, Rainer K.; Nolan, Robert F.; and Stapf, Carl J., 4,332,355, Cl. 242-56.00R.
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Statton, Gary L.; and Harris, Stephen H., to Atlantic Richfield Company. Dichloroparabanic acid stabilized diphenylmethane diisocyanate-polymethylene polyphenyl isocyanate compositions. 4,332,741, Cl. 260-453.0SP.
Staubli, Sebastian: *See—*
Seifert, Gottfried; and Staubli, Sebastian, 4,332,939, Cl. 544-217.000.
Stauffer Chemical Company: *See—*
Watson, James W., Jr.; Silvon, Michael P.; and Lobo, Brian J., 4,332,747, Cl. 260-986.000.
Stecklein, Alfred L.; and Daugherty, Jerome M., to Gates Rubber Company, The. V-Belt. 4,332,576, Cl. 474-205.000.
Steenken, Gerhard: *See—*
Wegerhoff, Arno; Zengel, Hans; Brodowski, Walter; Beck, Heinz; Seeberger, Ernst; Steenken, Gerhard; and Hillermeider, Karlheinz, 4,332,600, Cl. 65-2.000.
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Steger, Charles B., to General Motors Corporation. Steerable suspension strut with pneumatic spring. 4,332,397, Cl. 280-693.000.
Steinkuhl, Bernd: *See—*
Merten, Gerhard; Breuer, Oswald; and Steinkuhl, Bernd, 4,332,421, Cl. 299-34.000.
Stemmler, Kurt; and Kosche, Hartmut, to Winkler and Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG. Folding apparatus for preparing a zigzag web of paper. 4,332,583, Cl. 493-430.000.
Stenberg, Johan E.; Stiblert, Lars B.; and Sandstrom, Erland T. Method and apparatus for studying surface properties. 4,332,476, Cl. 356-369.000.
Stephens, Theodore C.: *See—*
Payne, Nicholas S.; Storm, Thomas D.; and Stephens, Theodore C., 4,332,692, Cl. 252-135.000.
Stephenson, Edgar O.; Kohl, John M.; and Cunningham, Charles R., to General Electric Company, Insulated casing assembly. 4,332,401, Cl. 285-47.000.
Stettner, Louis J. Archival print and film washer. 4,332,455, Cl. 354-324.000.
Steury, Thomas D., to International Business Machines Corporation. Balanced photoconductor usage control system. 4,332,465, Cl. 355-14.00R.
Steven Manufacturing Company: *See—*
Klawitter, Ronald R., 4,332,394, Cl. 280-11.270.
Stevens, Curtis E., to Bertea Corporation. Optical position transducer. 4,333,009, Cl. 250-237.00G.
Stevens, Curtis R., to Master Specialties Co. Miniature illuminated push button switch and indicator light. 4,332,990, Cl. 200-314.000.
Stevens, Ralph A. J.: *See—*
Smith, Geoffrey F. W.; Stevens, Ralph A. J.; and Jacoby, Benjamin, 4,332,784, Cl. 424-1.000.
Stewart, Myron C., to RCA Corporation. Transducer displacement apparatus for video disc player. 4,333,174, Cl. 369-256.000.
Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Support system for a fluidized bed. 4,332,218, Cl. 122-4.00D.
Steyert, William A.: *See—*
Barclay, John A.; and Steyert, William A., 4,332,135, Cl. 62-3.000.
Stiblert, Lars B.: *See—*
Stenberg, Johan E.; Stiblert, Lars B.; and Sandstrom, Erland T., 4,332,476, Cl. 356-369.000.

Stiftelsen Institutet for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm: *See—*
Henoch, Bengt; and Berglind, Eilert, 4,333,078, Cl. 343-6.5LC.
Stoelting Company: *See—*
Peterson, Donald A., 4,333,084, Cl. 346-17.000.
Stoffelsma, Jan: *See—*
van den Bosch, Steven; van't Land, Evert; and Stoffelsma, Jan, 4,332,829, Cl. 426-535.000.
Stolpe, Rudolf, to Dynaflair Corporation Canada, Inc. Rolling safety doors. 4,332,287, Cl. 160-133.000.
Stora, Richard A.; and Chase, Edward J., Jr. Fireplace heat exchanger. 4,332,236, Cl. 126-121.000.
Storm, Thomas D.: *See—*
Payne, Nicholas S.; Storm, Thomas D.; and Stephens, Theodore C., 4,332,692, Cl. 252-135.000.
Strange, Roger W. Means and method of reclaiming crankcase oil. 4,332,282, Cl. 141-1.000.
Straubel, Max: *See—*
Bauer, Otto; Eberl, Leonhard; Geyer, Gerhard; and Straubel, Max, 4,332,227, Cl. 123-502.000.
Straumann, Fritz: *See—*
Sutter, Franz; and Straumann, Fritz, 4,332,036, Cl. 3-1.910.
Streeter, Robert D., to Magnavox Consumer Electronics Co., The. Low frequency AM stereophonic broadcast and receiving apparatus. 4,332,978, Cl. 179-1.0GS.
Strodthoff, Glenn G. Resealable package. 4,332,344, Cl. 229-62.000.
Strom, Richard A., to Control Data Corporation. Pilot driver for plasma display device. 4,333,039, Cl. 315-169.400.
Strowik, Willibald, to Keiper Automobiltechnik GmbH & Co. KG. Adjustable hinge mount for seats having reclinable backrest, particularly motor vehicle seats. 4,332,418, Cl. 297-362.000.
Stuart, Robert J., to Hennessy Industries, Inc. Speed nut for a wheel balancer. 4,332,169, Cl. 73-487.000.
Stucheli, Edwin. Joint. 4,332,499, Cl. 403-53.000.
Stuck, Robert M., to Marshall Air Systems, Inc. Apparatus for preparation of foodstuffs, particularly sausages and buns. 4,332,189, Cl. 99-339.000.
Stutzle, Dietmar, to Diehl, Firma. Optoelectronic proximity sensor. 4,332,468, Cl. 356-5.000.
Sucreries du Soissonnais et Compagnie Sucriere: *See—*
Anatol, Jesus; Clenet, Yves; and Bourdiau, Georges, 4,332,959, Cl. 560-60.000.
Sugawara, Michiharu: *See—*
Kamogashira, Takashi; Nishida, Tsutomu; Sugawara, Michiharu; Nihno, Tomiyo; and Takegata, Setsuko, 4,332,891, Cl. 435-48.000.
Sugawara, Toshiyuki: *See—*
Mochida, Ei; Shinkai, Hiroyuki; Kudo, Takashi; and Sugawara, Toshiyuki, 4,332,788, Cl. 424-12.000.
Sugiyama, Toshio: *See—*
Yonezawa, Seiji; Sugiyama, Toshio; and Ojima, Masahiro, 4,333,173, Cl. 369-45.000.
Sulzer Brothers Ltd.: *See—*
Quack, Hans, 4,332,136, Cl. 62-54.000.
Sumioka, Atsushi: *See—*
Okamoto, Yukio; Mitani, Eisuke; Okabe, Tadao; and Sumioka, Atsushi, 4,333,040, Cl. 315-169.200.
Sumitomo Chemical Company, Limited: *See—*
Atsumi, Toshio; Takebayashi, Yoshiaki; and Kiyohara, Takao, 4,332,806, Cl. 424-273.00R.
Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, 4,332,859, Cl. 428-412.000.
Kanaoka, Masaharu; Yanagi, Hideki; and Ogino, Shigeo, 4,332,717, Cl. 260-112.00R.
Oi, Naobumi; Itoh, Tadamasa; and Yasumasa, Yoshiaki, 4,332,591, Cl. 23-230.0PC.
Sumitomo Electric Industries, Ltd.: *See—*
Mano, Hiroshi, 4,332,035, Cl. 3-1.400.
Sasatani, Yukihiro, 4,333,061, Cl. 372-46.000.
Sumitomo Light Metal Industries, Ltd.: *See—*
Andoh, Makoto, 4,332,628, Cl. 148-6.200.
Sun Chemical Corporation: *See—*
North, Bernard F., 4,332,586, Cl. 8-186.000.
Skrypek, John P.; Williams, Robert; and Dominico, James W., 4,332,316, Cl. 198-425.000.
Sun, Robert J.; and Maltby, Frederick L., to Drexelbrook Controls, Inc. Method of making an RF admittance measuring probe and product thereof. 4,332,167, Cl. 73-304.00C.
Sun Tech, Inc.: *See—*
Lyons, James E.; and Hsu, Chao-Yang, 4,332,963, Cl. 560-131.000.
Sunbeam Corporation: *See—*
Woodman, Robert C., 4,332,485, Cl. 366-142.000.
Surtin, Robert J. Automobile window shade device and methods of making and using the same. 4,332,414, Cl. 296-97.00D.
Suskina, Valentina I.: *See—*
Emanuel, Nikolai M.; Konovalova, Nina P.; Povarov, Leonard S.; Shapiro, Anatoly B.; Dyachkovskaya, Raisa F.; Suskina, Valentina I.; and Denisova, Ljudmila K., 4,332,934, Cl. 536-6.400.
Susman, Leon, to Sperry Corporation. Inhomogeneous dielectric dome antenna. 4,333,082, Cl. 343-754.000.
Sutherland, Hugh E.; Spiegelhalter, Philip J.; Spiegelhalter, Martin R.; and Goring, Brian H., to Southwater Security Limited. Security system. 4,333,074, Cl. 340-825.300.
Sutter, Franz; and Straumann, Fritz, to Institut Straumann AG. Universal joint prosthesis with cap. 4,332,036, Cl. 3-1.910.
Sutterlin, Philip H., to Ampex Corporation. Test control circuit for multichannel apparatus such as tape recorders and the like. 4,333,177, Cl. 371-15.000.
Sutton, Allan: *See—*
Pollard, Maurice G.; and Sutton, Allan, 4,332,201, Cl. 105-167.000.
Sutton, Richard C.: *See—*
Leiental, Mark; and Sutton, Richard C., 4,332,875, Cl. 430-45.000.
Suzuki, Seiji; Sakamoto, Kohichiro; and Kitagawa, Tohru, to Tokyo Electric Company, Limited. Load-cell balance. 4,332,174, Cl. 73-862.650.
Suzuki, Susumu: *See—*
Kobari, Harukuni; Yamada, Yasuhiro; Suzuki, Susumu; and Hibino, Chitoshi, 4,333,160, Cl. 364-900.000.
Suzuki, Tomoo: *See—*
Kurane, Ryuichiro; Suzuki, Tomoo; and Takahara, Yoshimasa, 4,332,904, Cl. 435-262.000.
Suzuki, Toshio: *See—*
Nakazawa, Takaaki; Nagata, Takenori; Kuroda, Yasuo; and Suzuki, Toshio, 4,332,412, Cl. 296-29.000.
Suzuki, Yukio: *See—*
Tsurumaru, Michiko; Suzuki, Yukio; and Nunokawa, Atsushi, 4,332,646, Cl. 204-1.00T.
Swainson, Wyn K.; and Kramer, Stephen D., to Formigraphic Engine Corporation. Three-dimensional pattern making methods. 4,333,165, Cl. 365-120.000.
Swiss Aluminium Ltd.: *See—*
Friedli, Hans; and Arnold, Erwin, 4,332,660, Cl. 204-245.000.
Sybron Corporation: *See—*
Earle, Roger W.; and Walsh, William J., 4,332,553, Cl. 432-205.000.
Syntex (U.S.A.) Inc.: *See—*
Clark, Robin D., 4,332,804, Cl. 424-248.570.
Fleming, Michael P., 4,332,723, Cl. 548-444.000.
Systems Consultants, Inc.: *See—*
Muralidhara, H. S., 4,332,584, Cl. 8-94.270.
Szommer, Ferenc: *See—*
Noszticzius, Zoltan; Olah, Karoly; Vajta, Zsofia; Palmai, Gyorgy; Patonay, Gabor; and Szommer, Ferenc, 4,332,664, Cl. 204-266.000.
Taarit, Younes B.: *See—*
Kervennal, Jacques; Elleuch, Boubaker; and Taarit, Younes B., 4,332,739, Cl. 260-453.0PC.
Tabata, Yasuhiro, to Ricoh Company, Ltd. Electrophotographic copying method. 4,332,877, Cl. 430-103.000.
Takagi, Tohru: *See—*
Makuuchi, Keizo; Katakai, Akio; Hagiwara, Miyuki; Yamamoto, Tsutomu; Nakayama, Hiroyuki; and Takagi, Tohru, 4,332,657, Cl. 204-159.220.
Takahara, Yoshimasa: *See—*
Kurane, Ryuichiro; Suzuki, Tomoo; and Takahara, Yoshimasa, 4,332,904, Cl. 435-262.000.
Takahashi, Kihei, to Yoshida Kogyo, K.K. Method of and apparatus for attaching end stops to slide fastener stringer tapes. 4,332,071, Cl. 29-408.000.
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, to Ishihara Sangyo Kaisha, Ltd. Herbicidal compound, herbicidal composition containing the same, and method of use thereof. 4,332,961, Cl. 560-62.000.
Takahashi, Satoji; and Toi, Koji, to Ajinomoto Company, Inc. Process for producing an α-L-aspartyl-L-phenylalanine lower alkyl ester. 4,332,718, Cl. 260-112.50R.
Takamatsu, Shunichi; and Maekawa, Kinshi, to Itoki Co., Ltd. Automatic code reading devices. 4,333,005, Cl. 235-435.000.
Takamisawa Cybernetics Co., Ltd.: *See—*
Yui, Masatoshi; Takeoda, Minoru; and Otsuka, Kazuo, 4,333,049, Cl. 324-102.000.
Takara Co., Ltd.: *See—*
Tomita, Tohru, 4,332,101, Cl. 46-9.000.
Takara Company, New York, Inc.: *See—*
Watanabe, Tony, 4,332,557, Cl. 433-77.000.
Takase, Shigeyuki: *See—*
Tanizaki, Yoshiharu; Takase, Shigeyuki; Minagawa, Kenichiro; and Watanabe, Kiyomitu, 4,332,689, Cl. 252-49.300.
Takebayashi, Yoshiaki: *See—*
Atsumi, Toshio; Takebayashi, Yoshiaki; and Kiyohara, Takao, 4,332,806, Cl. 424-273.00R.
Takeda Chemical Industries, Ltd.: *See—*
Hasegawa, Takashi; Miki, Minoru; and Taniguchi, Yutaka, 4,332,931, Cl. 528-297.000.
Miyawaki, Masaru; and Konno, Akira, 4,332,825, Cl. 426-330.500.
Takeda, Mikio: *See—*
Honma, Yasushi; Takeda, Mikio; and Tsuzurahara, Kei, 4,332,809, Cl. 424-266.000.
Takeda, Shoroku: *See—*
Koiwa, Yoshinori; Oka, Daishiro; and Takeda, Shoroku, 4,333,103, Cl. 358-19.000.
Takegata, Setsuko: *See—*
Kamogashira, Takashi; Nishida, Tsutomu; Sugawara, Michiharu; Nihno, Tomiyo; and Takegata, Setsuko, 4,332,891, Cl. 435-48.000.
Takei, Yutaka, to Sony Corporation. Method of manufacturing a magnetic recording medium. 4,332,834, Cl. 427-48.000.
Takemura, Yasuhiko: *See—*
Iida, Taketoshi; Saito, Kazuyoshi; Shrasaka, Toshio; and Takemura, Yasuhiko, 4,332,171, Cl. 73-626.000.

Takeoda, Minoru: *See*—
Yui, Masatoshi; Takeoda, Minoru; and Otsuka, Kazuo, 4,333,049, Cl. 324-102.000.
Takigawa, Hiroyoshi; and Miyamura, Nobuhiro, to Bridgestone Tire Company, Limited. Heavy duty pneumatic tire tread. 4,332,286, Cl. 152-209.00R.
Takikawa, Naohisa: *See*—
Ishii, Takami; Takikawa, Naohisa; Tokunaga, Kiyoaki; and Ogawa, Nobuhiro, 4,332,930, Cl. 528-233.000.
Talbot-Carlson, Inc.: *See*—
Davis, Grover M., 4,332,217, Cl. 119-29.000.
Tamm, Paul W.: *See*—
Spars, Byron G.; Tamm, Paul W.; and Wallman, P. H., 4,332,669, Cl. 208-11.00R.
Tamura, Humio: *See*—
Asano, Kiro; Tamura, Humio; Tanaka, Hiromitsu; and Enomoto, Satoru, 4,332,797, Cl. 424-238.000.
Tamura, Yasuyuki; Nakahata, Kimio; and Ishida, Masato, to Canon Kabushiki Kaisha. Electrically discharging method and device. 4,333,124, Cl. 361-214.000.
Tanabe Seiyaku Co., Ltd.: *See*—
Honma, Yasushi; Takeda, Mikio; and Tsuzurahara, Kei, 4,332,809, Cl. 424-266.000.
Tanaka, Etsuo: *See*—
Nakano, Yoshiyuki; and Tanaka, Etsuo, 4,332,452, Cl. 354-234.000.
Tanaka, Hiromitsu: *See*—
Asano, Kiro; Tamura, Humio; Tanaka, Hiromitsu; and Enomoto, Satoru, 4,332,797, Cl. 424-238.000.
Tanaka, Keiji: *See*—
Ohara, Katsunobu; Tanaka, Keiji; Ando, Yujiro; and Moriyama, Inao, 4,332,876, Cl. 430-68.000.
Tanaka, Yasunori; Noda, Shinji; and Chikamasa, Hiroshi, to Fuji Photo Film Co., Ltd. Coating method. 4,332,840, Cl. 427-130.000.
Tandler, Peter: *See*—
Schopper, Bernd; and Tandler, Peter, 4,332,423, Cl. 303-22.00R.
Tangonan, Gregory L.: *See*—
Pastor, Antonio C.; Pastor, Ricardo C.; Tangonan, Gregory L.; and Wong, Shi-Yin, 4,332,879, Cl. 430-272.000.
Tanguay, Donald J.; and Weitzel, Charles E., to RCA Corporation. Use of silicide to bridge unwanted polycrystalline silicon P-N junction. 4,333,099, Cl. 357-67.000.
Tanida, Hiroshi: *See*—
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,332,722, Cl. 260-245.400.
Taniguchi, Kiyoshi: *See*—
Uji-Ie, Koji; Umehara, Masaakira; Taniguchi, Kiyoshi; and Kunikane, Makoto, 4,332,884, Cl. 430-338.000.
Taniguchi, Makoto: *See*—
Mashiko, Koichiro; Ichiyama, Toshio; and Taniguchi, Makoto, 4,333,168, Cl. 365-210.000.
Taniguchi, Yutaka: *See*—
Hasegawa, Takashi; Miki, Minoru; and Taniguchi, Yutaka, 4,332,931, Cl. 528-297.000.
Taniyama, Susumu; and Shimaoka, Goro, to Mitsubishi Gas Chemical Company, Inc. Primer composition and a method for treating a plastics substrate using the same. 4,332,857, Cl. 428-412.000.
Tanizaki, Yoshiharu; Takase, Shigeyuki; Minagawa, Kenichiro; and Watanabe, Kiyomitu, to Nippon Oil and Fats Co., Ltd. Water base lubricant composition. 4,332,689, Cl. 252-49.300.
Tanner, Joseph F.: *See*—
Roberts, Michael G.; and Tanner, Joseph F., 4,332,707, Cl. 524-476.000.
Tanney, Oliver M., to Goodren Products Corp. Picture holder. 4,332,095, Cl. 40-158.00R.
Tao, Kak-Yuen: *See*—
Sartoretto, Paul; and Tao, Kak-Yuen, 4,332,610, Cl. 71-28.000.
Tao, Thomas M.: *See*—
Bean, William C.; and Tao, Thomas M., 4,332,756, Cl. 264-70.000.
Tasar, Omur: *See*—
Whiteside, Arliss E.; Freedman, Morris D.; and Tasar, Omur, 4,333,144, Cl. 364-200.000.
Tashiro, Mikio: *See*—
Minemura, Norihiro; Toyao, Manabu; Kobayashi, Tsukasa; and Tashiro, Mikio, 4,332,585, Cl. 8-114.600.
Tate, Jack F., to Texaco Inc. Aqueous acid solution containing an acrylamido alkanesulfonic acid polymer. 4,332,688, Cl. 252-8.55C.
Tatsumichi, Toshio: *See*—
Ota, Isao; Shirazawa, Haruhiro; Tatsumichi, Toshio; Kawarada, Hiroshi; and Ohtsuka, Tetsuro, 4,332,075, Cl. 29-571.000.
Taylor, Carson W.: *See*—
Cresap, Richard L.; Taylor, Carson W.; and Kreipe, Michael J., 4,333,021, Cl. 307-87.000.
Taylor, Dale F.; Sicko, John S.; and Passman, William S., to General Electric Company. Microprocessor-based state of charge gauge for secondary batteries. 4,333,149, Cl. 364-481.000.
Taylor, John K.: *See*—
Litchield, Peter J.; and Taylor, John K., 4,332,842, Cl. 427-176.000.
Taylor, Rebecca S., to Kendall Company, The. Drainage receptacle with support member. 4,332,252, Cl. 128-275.000.
Taylor, Robert L., to LKB-Produkter AB. Vessel for growing cells. 4,332,906, Cl. 435-291.000.
Taylor, William J., Jr. Drum magazine for automatic pistol or the like. 4,332,097, Cl. 42-50.000.
TBA Industrial Products Limited: *See*—
Litchield, Peter J.; and Taylor, John K., 4,332,842, Cl. 427-176.000.
TDK Electronics Co., Ltd.: *See*—
Hosaka, Akihiko, 4,332,863, Cl. 428-695.000.
Technicare Corporation: *See*—
Heuscher, Dominic J.; and Carlson, Roland W., 4,333,145, Cl. 364-414.000.
Teed, Stephen: *See*—
Koopman, Nicholas G.; Marcotte, Vincent C.; and Teed, Stephen, 4,332,343, Cl. 228-231.000.
Teijin Limited: *See*—
Minemura, Norihiro; Toyao, Manabu; Kobayashi, Tsukasa; and Tashiro, Mikio, 4,332,585, Cl. 8-114.600.
Teilhet, Michel, to Thomson-CSF. Device for distance acquisition in a radar system. 4,333,077, Cl. 343-6.00R.
Tektronix, Inc.: *See*—
Hood, Rush W., Jr., 4,333,023, Cl. 307-310.000.
Teledyne Industries, Inc.: *See*—
Smith, Raymond, 4,332,523, Cl. 415-126.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. 7-Amino-thia-diazole oxyimino derivatives of cephem and cephem compounds. 4,332,798, Cl. 424-246.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,332,800, Cl. 424-246.000.
Terashima, Kenzi, to Nippon Sheet Glass Co., Ltd. Fireproof windowpane and mounting frame therefor. 4,332,111, Cl. 52-1.000.
Terauchi, Kiyoshi; and Hiraga, Masaharu, to Sankyo Electric Company Limited. Scroll type compressor having an oil separator and oil sump in the suction chamber. 4,332,535, Cl. 418-55.000.
Termath, Gunter: *See*—
Dalstein, Rolf; Spies, Johann; Greif, Hans-Dieter; Termath, Gunter; Unbescheid, Jurgen; and Nowoczyn, Hans-Werner, 4,332,241, Cl. 126-450.000.
Texaco Development Corporation: *See*—
Schulze, Heinz; Zimmerman, Robert L.; and Waddill, Harold G., 4,332,720, Cl. 260-239.30R.
Texaco Inc.: *See*—
Chapman, Gary L.; and Cummins, William H., 4,332,086, Cl. 33-126.500.
Herbstman, Sheldon; Biasotti, Joseph B.; and Brennan, Michael E., 4,332,595, Cl. 44-72.000.
Knifton, John F., 4,332,914, Cl. 518-700.000.
Knifton, John F.; and Lin, Jiang-Jen, 4,332,915, Cl. 518-700.000.
Tate, Jack F., 4,332,688, Cl. 252-8.55C.
Texas A&M University: *See*—
Lawhon, James T.; and Manak, Larry J., 4,332,719, Cl. 260-123.500.
Texas Instruments: *See*—
Calder, Powell L., 4,333,143, Cl. 364-200.000.
Texas Instruments Incorporated: *See*—
Domogalla, John C., 4,333,025, Cl. 307-355.000.
Johnson, Larry K., 4,332,082, Cl. 29-622.000.
McElroy, David J., 4,333,167, Cl. 365-222.000.
Textron, Inc.: *See*—
Rieth, Kurt A.; and Bert, Stephen F., 4,332,061, Cl. 24-343.000.
Thamm, Horst-Dieter; Knittel, Volker; Sommer, Werner; and Weckler, Gerhard, to Hoechst Aktiengesellschaft. Diphosphonodicarboxylic acid esters. 4,332,746, Cl. 260-932.000.
Therapac Div., Krelitz Industries, Inc.: *See*—
Beskin, Gerald S., 4,332,364, Cl. 248-442.200.
Thermatool Corp.: *See*—
Huppunen, Robert D.; and Mor[illegible], Theodore J., 4,332,373, Cl. 266-228.000.
Thern, Rolf A. B.; and Dahlberg, Peter, to U.S. Philips Corporation. Device for controlling the carriage movement in a printer. 4,332,492, Cl. 400-320.000.
Thibodeau, Michael J.; and Balcerski, James S., to American Cyanamid Company. Phosphoric acid filtration process. 4,332,779, Cl. 423-321.00R.
Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., to Douwe Egberts Koninklijke Tabaksfabriek, Koffiebranderijin en Theehandel B.V. Counter current crystallizer. 4,332,140, Cl. 62-123.000.
Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., to Douwe Egberts Koninklijke, Tabaksfabriek-Koffiebranderijen - Theehandel B.V. Continuous packed bed wash column. 4,332,599, Cl. 62-542.000.
Thill, Bruce P., to Dow Chemical Company, The. Ion exchange polymers on improved porous substrates. 4,332,916, Cl. 521-25.000.
Thomas & Betts Corporation: *See*—
Dienes, Zoltan B., 4,332,975, Cl. 174-76.000.
Thomas, Penrhyn F. Contact lenses. 4,332,443, Cl. 351-160.00H.
Thomas, Ralph H., to Ident-A-Call, Inc. Telephone toll call security and logging device and method. 4,332,982, Cl. 179-7.10R.
Thompson, Doyle D., to Form Flo Equipment Manufacturers Inc. Adjustable paper folding apparatus. 4,332,581, Cl. 493-413.000.
Thompson, James. Insertion device. 4,332,251, Cl. 128-263.000.
Thompson, James A., to De Lorean Manufacturing Company. Low disturbance track cleat and ice calk structure for firm or icy snow. 4,332,424, Cl. 305-35.0EB.
Thompson, Neil E. S.; Redmore, Derek; Oude Alink, Bernardus A.; and Outlaw, Benjamin T., to Petrolite Corporation. Compounds containing sulfur and amino groups. 4,332,967, Cl. 564-162.000.
Thompson, Richard K., Jr.: *See*—
Balde, John W.; Spencer, Robert A.; and Thompson, Richard K., Jr., 4,332,433, Cl. 339-99.00R.
Thomson-CSF: *See*—
Cachier, Gerard, 4,333,076, Cl. 343-5.0DD.
Peyre-Lavigne, Andre, 4,332,837, Cl. 427-57.000.

Teilhet, Michel, 4,333,077, Cl. 343-6.00R.
Thomson, Thomas H., to Staodynamics, Inc. Positive displacement intravenous infusion pump device and method. 4,332,246, Cl. 128-214.00F.
Tiberg, Sven-Erik: *See—*
Sinha, Brajnandan; and Tiberg, Sven-Erik, 4,333,146, Cl. 364-426.000.
Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., to Warner-Lambert Company. Certain 2-pyridylamino-3-thiophene carboxylic acid derivatives. 4,332,947, Cl. 546-284.000.
Titanium Technology (Australia) Ltd.: *See—*
Dunn, Wendell D., Jr., 4,332,615, Cl. 75-1.0TI.
Titeflex Corporation: *See—*
Lalikos, James M.; and Waite, Harold K., 4,332,278, Cl. 138-127.000.
Titmus Eurocon: *See—*
Kossmehl, Gerhard; Quast, Dietrich; and Schafer, Horst, 4,332,922, Cl. 525-478.000.
Tlustakova, Marie: *See—*
Kalal, Jaroslav; and Tlustakova, Marie, 4,332,694, Cl. 252-189.000.
Toagosei Chemical Industry Co., Ltd.: *See—*
Endo, Takeshi; Ogasawara, Takahisa; and Mizutani, Kiyokazu, 4,332,731, Cl. 549-334.000.
Tobias, Michael A.: *See—*
Ponyik, Charles A., Jr.; and Tobias, Michael A., 4,332,701, Cl. 524-539.000.
Toews, Norman J. Wall or panel connector and panels therefor. 4,332,119, Cl. 52-772.000.
Toho Titanium Co., Ltd.: *See—*
Kimura, Kouhei; Ohba, Hiroyasu; and Murai, Atsushi, 4,332,697, Cl. 252-429.00B.
Toi, Koji: *See—*
Takahashi, Satoji; and Toi, Koji, 4,332,718, Cl. 260-112.50R.
Tokitoh, Hirohiko: *See—*
Kato, Yutaka; Tokitoh, Hirohiko; Kitahara, Tomohiro; and Ito, Hiromi, 4,332,472, Cl. 356-344.000.
Tokunaga, Kiyoaki: *See—*
Ishii, Takami; Takikawa, Naohisa; Tokunaga, Kiyoaki; and Ogawa, Nobuhiro, 4,332,930, Cl. 528-233.000.
Tokyo Electric Company, Limited: *See—*
Suzuki, Seiji; Sakamoto, Kohichiro; and Kitagawa, Tohru, 4,332,174, Cl. 73-862.650.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Iida, Taketoshi; Ssito, Kazuyoshi; Shrasaka, Toshio; and Takemura, Yasuhiko, 4,332,171, Cl. 73-626.000.
Matsushima, Tetsuo, 4,333,151, Cl. 364-492.000.
Nagano, Katsumi, 4,333,141, Cl. 363-127.000.
Nakagawa, Noboru; Oonishi, Toshiyuki; Tsutsumi, Masato; and Kawamoto, Akira, 4,332,138, Cl. 62-199.000.
Nishida, Katsutoshi; and Ochiai, Toshihiko, 4,332,909, Cl. 501-97.000.
Ono, Akira, 4,332,473, Cl. 356-356.000.
Shibahara, Jun; and Matsumura, Akira, 4,332,993, Cl. 219-10.55R.
Tsubo, Shuzo, 4,332,375, Cl. 271-9.000.
Yamaguchi, Hiroyasu; and Ishii, Takashi, 4,333,059, Cl. 330-265.000.
Yamaguti, Yasuhiro, 4,333,087, Cl. 346-140.00R.
Tolentino, Luisito A., to General Electric Company. Process for preparing acyloxysilanes. 4,332,956, Cl. 556-442.000.
Tomita, Tohru, to Takara Co., Ltd. Toy kitchen assembly. 4,332,101, Cl. 46-9.000.
Toovey, Kenneth S.: *See—*
Baragar, Harold A.; and Toovey, Kenneth S., 4,332,160, Cl. 73-84.000.
Topliffe, Roger O., to United States of America, Army. Automatically deployed shell fins. 4,332,360, Cl. 244-3.270.
Toray Industries, Inc.: *See—*
Kitanaka, Minoru; and Izumi, Zenji, 4,332,767, Cl. 264-322.000.
Toray Silicone Limited: *See—*
Hamada, Mitsuo; Yasuda, Sadami; and Hasegawa, Chiichiro, 4,332,844, Cl. 427-387.000.
Ona, Isao; and Ozaki, Masaru, 4,332,715, Cl. 524-265.000.
Torikata, Akio: *See—*
Arai, Mamoru; Torikata, Akio; Enokita, Ryuzou; Haneishi, Tatsuo; and Nakajima, Mutsuo, 4,332,902, Cl. 435-253.000.
Torstensson, Bengt-Arne. Device for determining the pore water pressure in a soil. 4,332,172, Cl. 73-707.000.
Townsend, Richard J. Euchre score board. 4,332,386, Cl. 273-148.00A.
Townsend, Todd V.: *See—*
Cook, R. Gordon; and Townsend, Todd V., 4,333,175, Cl. 370-56.000.
Toyama, Kenji: *See—*
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.
Toyao, Manabu: *See—*
Minemura, Norihiro; Toyao, Manabu; Kobayashi, Tsukasa; and Tashiro, Mikio, 4,332,585, Cl. 8-114.600.
Toyo Engineering Corporation: *See—*
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.
Toyo Kogyo Co., Ltd.: *See—*
Hujimoto, Yoshio; Kochi, Tadashi; and Furuya, Shigeru, 4,333,131, Cl. 362-372.000.
Morishita, Tsuyoshi; Yagii, Koji; Inmaru, Kiyokazu; and Miyake, Kenji, 4,332,616, Cl. 75-243.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Tsurumaru, Michiko; Suzuki, Yukio; and Nunokawa, Atsushi, 4,332,646, Cl. 204-1.00T.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nomura, Yoshihisa, 4,332,311, Cl. 188-340.000.
Troncoso, Fernando, Jr. Archery bow with spring-biased arrow rest. 4,332,232, Cl. 124-24.00R.
Troponwerke GmbH & Co. KG: *See—*
Boltze, Karl-Heinz; Raddatz, Siegfried; and Seidel, Peter-Rudolf, 4,332,727, Cl. 548-501.000.
Etschenberg, Eugen; Jacobi, Haireddin; and Opitz, Wolfgang, 4,332,819, Cl. 424-301.000.
Trosken, Jurgen; Horlein, Gerhard; Schulze, Ernst-Friedrich; and Langeluddeke, Peter, to Hoechst Aktiengesellschaft. Herbicidal compositions. 4,332,960, Cl. 560-62.000.
Trudeau, William H.: *See—*
Smith, Joseph E., Jr.; and Trudeau, William H., 4,332,500, Cl. 403-114.000.
TRW Inc.: *See—*
Crackel, John E., 4,333,055, Cl. 328-133.000.
Worth, Joseph P.; and Fletcher, Bert B., 4,333,069, Cl. 338-315.000.
Tsao, George T.: *See—*
Gong, Cheng-Shung; Chen, Li-Fu; and Tsao, George T., 4,332,903, Cl. 435-254.000.
Tschudi, Giulio, to Hermes Precisa International S.A. Lining-up assembly for a printing disc. 4,332,490, Cl. 400-175.000.
Tsubo, Shuzo, to Tokyo Shibaura Denki Kabushiki Kaisha. Copy sheet-feeding apparatus. 4,332,375, Cl. 271-9.000.
Tsuboshima, Kosaku, to Olympus Optical Company, Ltd. Chemical substance detection apparatus. 4,332,658, Cl. 204-195.00M.
Tsuda, Singo; Yamaga, Minoru; and Kawai, Yuzuru, to Matsushita Electric Industrial Co., Ltd. Battery coil construction. 4,332,867, Cl. 429-94.000.
Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, to Shionogi & Co., Ltd. Cyclization to form cephem ring and intermediates therefor. 4,332,722, Cl. 260-245.400.
Tsukamura, Yoshihiro: *See—*
Ohgoshi, Akio; Nakayama, Akira; Tsukamura, Yoshihiro; and Natori, Takehisa, 4,333,034, Cl. 313-407.000.
Tsukishima Kikai Co., Ltd.: *See—*
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.
Tsunefuji, Katsuhiko, to Olympus Optical Company Ltd. Electromagnetic shutter apparatus for camera. 4,332,447, Cl. 354-209.000.
Tsurumaru, Michiko; Suzuki, Yukio; and Nunokawa, Atsushi, to Toyo Seikan Kaisha, Ltd. Method for assaying iron-exposed portion of coated steel plate or processed product thereof. 4,332,646, Cl. 204-1.00T.
Tsutsui, Kyoji: *See—*
Sakai, Kiyoshi; Hashimoto, Mitsuru; and Tsutsui, Kyoji, 4,332,948, Cl. 542-417.000.
Tsutsumi, Masato: *See—*
Nakagawa, Noboru; Oonishi, Toshiyuki; Tsutsumi, Masato; and Kawamoto, Akira, 4,332,138, Cl. 62-199.000.
Tsuzurahara, Kei: *See—*
Honma, Yasushi; Takeda, Mikio; and Tsuzurahara, Kei, 4,332,809, Cl. 424-266.000.
Tucker, Gordon H.; and Fitch, Robert E., to Boeing Company, The. Afterburner for combustion of starved-air combustor fuel gas containing suspended solid fuel and fly ash. 4,332,206, Cl. 110-203.000.
Tully, Michael E.: *See—*
Roggenburg, Stanley L., Jr.; and Tully, Michael E., 4,332,750, Cl. 264-23.000.
Turatti, Mario. Safety system for a motor vehicle steering lock. 4,332,306, Cl. 180-287.000.
Turpin, Frank G.: *See—*
Drum, Ian; Madenburg, Richard S.; Paulsrude, Douglas M.; Sherman, Carroll H.; Turpin, Frank G.; and Wheatcroft, Gerry A., 4,332,774, Cl. 422-111.000.
Twyman, Raymond B. Cargo spring batten. 4,332,515, Cl. 410-149.000.
Tyers, G. Frank: *See—*
Brownlee, Robert R.; Tyers, G. Frank; and Neff, Paul H., 4,332,256, Cl. 128-419.0PT.
UBE Industries, Ltd.: *See—*
Ishii, Takami; Takikawa, Naohisa; Tokunaga, Kiyoaki; and Ogawa, Nobuhiro, 4,332,930, Cl. 528-233.000.
Uchida, Kanich; and Sawamura, Hitoshi, to Kabushiki Kaisha Komatsu Seisakusho. Sprocket wheels of an endless track-type vehicle. 4,332,573, Cl. 474-94.000.
Uehara, Haruo; and Satomi, Kunio, to Canon Kabushiki Kaisha. Internal reflection suppressing coating material for optical glass. 4,332,706, Cl. 523-450.000.
Ueno, Norio: *See—*
Kato, Seiji; Ueno, Norio; Kakuishi, Mitsuo; Ito, Akihiko; and Iwata, Atsushi, 4,333,064, Cl. 333-173.000.
Uffner, William E., to Owens-Corning Fiberglas Corporation. Asphalt composition modified with a rubbery polymer. 4,332,705, Cl. 523-206.000.
Ugai, Yasuo: *See—*
Arai, Asajiro; and Ugai, Yasuo, 4,332,258, Cl. 128-666.000.
Uji-Ie, Koji; Umehara, Masaakira; Taniguchi, Kiyoshi; and Kunikane, Makoto, to Ricoh Co., Ltd. Photo-sensitive and heat-sensitive com-

position and recording element using same. 4,332,884, Cl. 430-338.000.
Umehara, Masaakira: *See*—
Uji-Ie, Koji; Umehara, Masaakira; Taniguchi, Kiyoshi; and Kunikane, Makoto, 4,332,884, Cl. 430-338.000.
Umezawa, Hamao; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 6''-Deoxydibekacin, 4'',6''-dideoxydibekacin and 1-N-aminoacyl derivatives thereof, and the production of these new compounds. 4,332,794, Cl. 424-180.000.
Unbescheid, Jurgen: *See*—
Dalstein, Rolf; Spies, Johann; Greif, Hans-Dieter; Termath, Gunter; Unbescheid, Jurgen; and Nowoczyn, Hans-Werner, 4,332,241, Cl. 126-450.000.
Uniforms To You & Co.: *See*—
Frank, Jonathan M., 4,332,033, Cl. 2-105.000.
Union Carbide Corporation: *See*—
Esposito, James E., 4,332,613, Cl. 71-105.000.
Shah, Naresh R., 4,332,716, Cl. 521-137.000.
Union Oil Company of California: *See*—
Sandiford, Burton B., 4,332,297, Cl. 166-270.000.
Union Special G.m.b.H.: *See*—
Gauch, Hermann, 4,332,209, Cl. 112-287.000.
United Healthcare Association: *See*—
Gortz, Norman; Huson, Andrew S.; and MacIntyre, Robert M., 4,332,264, Cl. 134-57.00R.
United States Filter Fluid Systems Corporation: *See*—
O'Cheskey, Theodore H., 4,332,680, Cl. 210-143.000.
United States of America
Army: *See*—
Bailey, Escar L.; and Walker, Clifford G., 4,332,090, Cl. 33-366.000.
Roach, Charles D., 4,333,066, Cl. 335-206.000.
Topliffe, Roger O., 4,332,360, Cl. 244-3.270.
Energy: *See*—
Barclay, John A.; and Steyert, William A., 4,332,135, Cl. 62-3.000.
Brassell, Gilbert W.; Lewis, John, Jr.; and Weber, Gary W., 4,332,751, Cl. 264-28.000.
Chertock, Alan J., deceased; Fox, Jack N.; and Weissinger, Robert B., 4,332,640, Cl. 376-264.000.
Cresap, Richard L.; Taylor, Carson W.; and Kreipe, Michael J., 4,333,021, Cl. 307-87.000.
House, Palmer A., 4,332,520, Cl. 415-63.000.
Hovis, Victor M., Jr.; and Northcutt, Walter G., Jr., 4,332,617, Cl. 75-214.000.
Health and Human Services: *See*—
Levy, David E.; Zwies, Alfred; and Duffy, Thomas E., 4,332,244, Cl. 128-205.250.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Margolis, Jack S. Coherently pulsed laser source. 4,332,441, Cl. 350-358.000.
Navy: *See*—
Berk, Edmund C., 4,332,365, Cl. 248-544.000.
Conyers, John A.; Oberth, Adolph E.; and Santerre, George M., 4,332,632, Cl. 149-19.200.
Dick, John O.; McKenzie, Joe A.; and Bradford, William C., 4,333,079, Cl. 343-7.0PF.
Gilligan, William H.; and Stafford, Scott L., 4,332,744, Cl. 260-463.000.
Hoyt, Jack W., 4,333,169, Cl. 367-1.000.
Means, James E., 4,332,199, Cl. 102-276.000.
U.S. Philips Corporation: *See*—
Alkema, Frederik H.; and Luursema, Meerten, 4,333,127, Cl. 362-17.000.
Mester, Heinz, 4,333,011, Cl. 250-409.000.
Peek, Hermanus L.; and Collet, Marnix G., 4,332,078, Cl. 29-580.000.
Solo de Zaldivar, Jose, 4,332,076, Cl. 29-571.000.
Thern, Rolf A. B.; and Dahlberg, Peter, 4,332,492, Cl. 400-320.000.
van Der Put, Henricus C. A., 4,332,342, Cl. 228-180.00A.
Voorman, Johannes O., 4,333,158, Cl. 364-825.000.
Whelan, Maurice V.; and Le Can, Claude J. P. F., 4,333,022, Cl. 307-304.000.
United States Steel Corporation: *See*—
Jacko, John; and Stack, William F., 4,332,085, Cl. 33-143.00R.
United Technologies Corporation: *See*—
Cheney, Marvin C., Jr., 4,332,525, Cl. 416-134.00A.
Schwarz, Frederick M.; Griffin, James G.; and Gudaitus, Vytautis P., 4,332,133, Cl. 60-39.750.
Universal Foods Corporation: *See*—
Rust, Robert R., 4,332,831, Cl. 426-582.000.
University of Kentucky Research Foundation: *See*—
Burbank, Peter L., 4,332,569, Cl. 434-272.000.
University of Pennsylvania, Trustees of the: *See*—
Zemel, Jay N.; and Rahnamai, Hamid, 4,332,157, Cl. 73-26.000.
University Patents, Inc.: *See*—
Allen, Robert H.; and Seligman, Paul A., 4,332,785, Cl. 424-1.000.
Upjohn Company, The: *See*—
Manis, Jack J.; and Highlander, Sarah K., 4,332,900, Cl. 435-172.000.
Reusser, Fritz, 4,332,898, Cl. 435-172.000.
Urban, Raymond C., to General Electric Company. Process for producing composite insulating material. 4,332,836, Cl. 427-44.000.
Uwano, Tomoki, to Matsushita Electric Industrial Co., Ltd. Temperature stabilized MIC solid-state oscillator. 4,333,062, Cl. 331-99.000.
V. Kann Rasmussen Holding A/S: *See*—
Berneke, Erik S., 4,332,663, Cl. 204-277.000.
Vago, Pal: *See*—
Fischer, Janos; Rozsa, Laszlo; Vago, Pal; Bakonyi, Anna; and Fazekas, Gabor, 4,332,725, Cl. 548-533.000.
Vajta, Zsofia: *See*—
Noszticzius, Zoltan; Olah, Karoly; Vajta, Zsofia; Palmai, Gyorgy; Patonay, Gabor; and Szommer, Ferenc, 4,332,664, Cl. 204-266.000.
Vakili, Hosein. Telephone privacy controller. 4,332,983, Cl. 179-17.00B.
Valkenburg, Wilhelmus G. H. Procedure and arrangement for keeping livestock. 4,332,216, Cl. 119-22.000.
Valmet Oy: *See*—
Kankaanpaa, Matti, 4,332,191, Cl. 100-162.00R.
Van Doorne's Transmissie B.V.: *See*—
Hendriks, Emery F. M., 4,332,575, Cl. 474-201.000.
Van Auwelaer, James M.; Hutchinson, Eugene B.; and Braet, Jerome A., to Deere & Company. Automatic height control for a harvester header. 4,332,126, Cl. 56-10.200.
Van de Caveye, Yves H., to Societe D'Exploitation des Etablissements Minato. Press for moulding concrete products. 4,332,540, Cl. 425-182.000.
van den Bosch, Steven; van't Land, Evert; and Stoffelsma, Jan, to Polak's Frutal Works, B.V. Methylthiomethyl esters as flavor additives. 4,332,829, Cl. 426-535.000.
Vanderbilt University: *See*—
Venkataramu, Sindhaghatta D.; Pearson, Donald E.; and Beth, Albert H., 4,332,946, Cl. 546-208.000.
van der Malen, Bernardus G. M.: *See*—
Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., 4,332,140, Cl. 62-123.000.
Thijssen, Henricus A. C.; and van der Malen, Bernardus G. M., 4,332,599, Cl. 62-542.000.
van der Meulen, Leonard. Apparatus for making thermoplastic carrier bags. 4,332,578, Cl. 493-197.000.
van Der Put, Henricus C. A., to U.S. Philips Corporation. Method of soldering components to a thick-film substrate. 4,332,342, Cl. 228-180.00A.
Van Gooswilligen, Gerrit: *See*—
Lijzenga, Jan; Van Gooswilligen, Gerrit; and Blanken, Thomas C., 4,332,703, Cl. 524-68.000.
van Laar, Jacobus; Felthuis, Jacob; and Kastelic, Wilhelmus A. J., to Hoogovens Ijmuiden B.V. Shaft furnace having cooling plates. 4,332,554, Cl. 432-233.000.
van't Land, Evert: *See*—
van den Bosch, Steven; van't Land, Evert; and Stoffelsma, Jan, 4,332,829, Cl. 426-535.000.
Van Tao, Nguyen: *See*—
Bellmann, Gunter; and Van Tao, Nguyen, 4,332,964, Cl. 560-141.000.
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Zitelli, Louis T., 4,333,030, Cl. 313-94.000.
Varker, Alan E.: *See*—
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Hertrich, Klaus, 4,332,582, Cl. 493-424.000.
Vella, Guy: *See*—
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Haslmayr, Johann; and Feichtner, Hannes, 4,332,551, Cl. 432-19.000.
Reithner, Gerhard; Wagner, Peter; and Kagerhuber, Franz, 4,332,289, Cl. 164-446.000.
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Palombi, Edward R.; and Vogelman, Joseph H., 4,332,981, Cl. 179-2.0EA.
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Palombi, Edward R.; and Vogelman, Joseph H., 4,332,981, Cl. 179-2.0EA.
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Vukich, John. Extendible finger wrench. 4,332,178, Cl. 81-439.000.
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Nozemack, Richard J., 4,332,699, Cl. 252-455.00Z.
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Wageley, Tevis R. Portable blind and shelter. 4,332,266, Cl. 135-5.00R.
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Reithner, Gerhard; Wagner, Peter; and Kagerhuber, Franz, 4,332,289, Cl. 164-446.000.
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Lalikos, James M.; and Waite, Harold K., 4,332,278, Cl. 138-127.000.
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Waldo, Russell W.; and Engstrom, George L., to Ideal Security Hardware Corporation. Automatically locking crossbolt deadlock. 4,332,407, Cl. 292-161.000.
Walin, Gosta. Oil collecting apparatus. 4,332,519, Cl. 415-52.000.
Walker, Clifford G.: *See—*
Bailey, Escar L.; and Walker, Clifford G., 4,332,090, Cl. 33-366.000.
Walker, Michael J., to Lucas Industries Limited. Apparatus for use in testing an internal combustion engine ignition system. 4,333,054, Cl. 324-380.000.
Wallis, Bernard J. Combined punch retainer and fluid-actuated stripper. 4,332,179, Cl. 83-137.000.
Wallman, P. H.: *See—*
Spars, Byron G.; Tamm, Paul W.; and Wallman, P. H., 4,332,669, Cl. 208-11.00R.
Walsh, William J.: *See—*
Earle, Roger W.; and Walsh, William J., 4,332,553, Cl. 432-205.000.
Wank, Joachim: *See—*
Schmidt, Manfred; Wank, Joachim; and Reese, Eckart, 4,332,921, Cl. 525-462.000.
Ward, Carter J. Solar-energy-powered sun tracker. 4,332,240, Cl. 126-425.000.
Ward, Joseph O. Coin operated lock mechanism. 4,332,315, Cl. 194-1.00G.
Ward, Terence J., to John Wyeth & Brother Limited. Guanidine derivatives. 4,332,822, Cl. 424-324.000.
Ware, Don E. Adjustable light hanger. 4,332,363, Cl. 248-321.000.
Warfel, David R., to Atlantic Richfield Company. Direct production of elastomer compound from reactor solution. 4,332,760, Cl. 264-143.000.
Warner-Lambert Company: *See—*
Tinney, Francis J.; Connor, David T.; Cetenko, Wiaczeslaw A.; Kerbleski, Joseph J.; and Sorenson, Roderick J., 4,332,947, Cl. 546-284.000.
Warnke, Hans: *See—*
Bahre, Karl; Boer, Werner; Richter, Jorg; Seebacher, Gerald; and Warnke, Hans, 4,332,317, Cl. 198-734.000.
Warnock, William A., to John D. Hollingsworth on Wheels, Inc. Web doffing apparatus. 4,332,058, Cl. 19-106.00R.
Watanabe, Kiyomitu: *See—*
Tanizaki, Yoshiharu; Takase, Shigeyuki; Minagawa, Kenichiro; and Watanabe, Kiyomitu, 4,332,689, Cl. 252-49.300.
Watanabe, Tony, to Takara Company, New York, Inc. Dental operatory system. 4,332,557, Cl. 433-77.000.
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Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natuko; and Watanabe, Toshiyasu, 4,332,966, Cl. 560-206.000.
Watasue, Toshiaki; and Makabe, Hachiro, to Janome Sewing Machine Co., Ltd. Sewing machine speed control circuit. 4,332,208, Cl. 112-277.000.
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Spears, Harry L., 4,332,533, Cl. 417-513.000.
Watson, James W., Jr.; Silvon, Michael P.; and Lobo, Brian J., to Stauffer Chemical Company. Process for producing dialkyl phosphorochloridothionates. 4,332,747, Cl. 260-986.000.
Waugh, Robert E.: *See—*
Auld, David L.; and Waugh, Robert E., 4,332,074, Cl. 29-527.400.
Wayt, Newell E. Well cleaning tool. 4,332,296, Cl. 166-171.000.
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Weber, Gary W.: *See—*
Brassell, Gilbert W.; Lewis, John, Jr.; and Weber, Gary W., 4,332,751, Cl. 264-28.000.
Weber, Klaus: *See—*
Schipper, Heinz; Hartig, Wolfgang; Weber, Klaus; Blumberg, Josef; and Wessolowski, Bernd, 4,332,129, Cl. 57-105.000.
Webster, E. Graham, to Sperry Corporation. Automatic hydraulic neutralizing mechanism. 4,332,261, Cl. 130-27.00R.
Weckler, Gerhard: *See—*
Thamm, Horst-Dieter; Knittel, Volker; Sommer, Werner; and Weckler, Gerhard, 4,332,746, Cl. 260-932.000.
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Weisbrich, Alfred L. Multifunctional tarp rotor strut vanes. 4,332,518, Cl. 415-2.00R.
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Chertock, Alan J., deceased; Fox, Jack N.; and Weissinger, Robert B., 4,332,640, Cl. 376-264.000.
Weissman, Bernard, to IPCO Corporation. Flexible dental retaining splint. 4,332,563, Cl. 433-215.000.
Weitzel, Charles E.: *See—*
Tanguay, Donald J.; and Weitzel, Charles E., 4,333,099, Cl. 357-67.000.
Welch, Calvin D.: *See—*
Kluger, Edward W.; and Welch, Calvin D., 4,332,928, Cl. 528-113.000.
Weldon Hydraulics, Inc.: *See—*
Flinchbaugh, Donald E., deceased, 4,332,110, Cl. 51-165.780.
Wendell, David E. Hot tap apparatus and method. 4,332,272, Cl. 137-318.000.
Wendland, Paul H., to Photodyne, Inc. Optical multimeter. 4,332,469, Cl. 356-222.000.
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West, Vern W.: *See—*
Bradley, Dennis K.; Brewbaker, Harold R.; and West, Vern W., 4,332,511, Cl. 405-178.000.
Westberg, Stefan, to A-Betong AB. Method and support for angularly adjusting a building element. 4,332,118, Cl. 52-263.000.
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Balde, John W.; Spencer, Robert A.; and Thompson, Richard K., Jr., 4,332,433, Cl. 339-99.00R.
Blitchington, Frank H., 4,333,044, Cl. 318-636.000.
Western Industries, Inc.: *See—*
Baumann, Richard S., 4,332,550, Cl. 431-344.000.
Westinghouse Electric Corp.: *See—*
Cane, Domenick; and Peterson, Ray D., 4,332,642, Cl. 202-173.000.
Haynes, John; and Huggins, Thomas B., Sr., 4,332,120, Cl. 53-245.000.
Ivey, Curtis L., 4,333,148, Cl. 364-469.000.
Matty, Thomas C.; and James, Aaron C., 4,333,150, Cl. 364-484.000.
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Drum, Ian; Madenburg, Richard S.; Paulsrude, Douglas M.; Sherman, Carroll H.; Turpin, Frank G.; and Wheatcroft, Gerry A., 4,332,774, Cl. 422-111.000.
Whelan, Maurice V.; and Le Can, Claude J. P. F., to U.S. Philips Corporation. Semiconductor device for digitizing an electric analog signal. 4,333,022, Cl. 307-304.000.
Whistler, Roy L., to Purdue Research Foundation. Conversion of guar gum to gel-forming polysaccharides by the action of α-galactosidase. 4,332,894, Cl. 435-99.000.
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Larson, Clayton E., 4,332,308, Cl. 182-120.000.
Whiteside, Arliss E., to Bendix Corporation, The. An analog-to-digital converter accurate relative to the value of the input signal. 4,333,075, Cl. 340-347.0AD.
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Gordon, Marvin; and Lichtenstein, Joseph, 4,332,369, Cl. 251-114.000.
Whitson, Dennis L.: *See—*
Davis, Paul C.; Jackson, Raymond G.; Sodomsky, Kenneth F.; and Whitson, Dennis L., 4,332,984, Cl. 179-81.00R.
Williams, John W.; and Becker, Frank C., to Abbott Laboratories. 1-Acryloyl-3-(substituted)phenyl ureas. 4,332,821, Cl. 424-322.000.
Williams, Paul B.: *See—*
Chamran, Morteza M.; Scott, Larkin B.; Williams, Paul B.; and Ford, Michael A., 4,332,470, Cl. 356-325.000.
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Skrypek, John P.; Williams, Robert; and Dominico, James W., 4,332,316, Cl. 198-425.000.
Williams, Robert A.: *See—*
Haaf, William R.; Lee, Gim F., Jr.; and Williams, Robert A., 4,332,714, Cl. 524-141.000.

Williams, Ronald A., to Baxter Travenol Laboratories, Inc. Method of making and filling liquid-containing sterile packages such as blood bags. 4,332,122, Cl. 53-425.000.

Williams, Thomas P. Open cart roof structure. 4,332,415, Cl. 296-213.000.

Williams, William F., to Serck Industries, Limited. Fluid flow control valve, principally of the ball or plug type. 4,332,370, Cl. 251-214.000.

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Langlais, Richard A.; Ogawa, Francis T.; and Wilwerding, Dennis J., 4,333,007, Cl. 250-201.000.

Winberg, Dennis G.: *See—*
Nowlin, Duane D.; and Winberg, Dennis G., 4,332,685, Cl. 210-638.000.

Winkler and Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG: *See—*
Stemmler, Kurt; and Kosche, Hartmut, 4,332,583, Cl. 493-430.000.

Winter, Claus: *See—*
Ehrmann, Wolfgang; and Winter, Claus, 4,332,406, Cl. 292-18.000.

Wintraecken, Johannes J. M. H.: *See—*
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,332,711, Cl. 523-402.000.

Wittke, James P., to RCA Corporation. Method for machining a workpiece with a beam of radiant energy assisted by a chemically-reactive gas. 4,332,999, Cl. 219-121.0LJ.

Wittman, Robert H.: *See—*
Adkins, David E.; Chin, Arthur H. T.; Haws, Ronnie E.; and Wittman, Robert H., 4,332,277, Cl. 138-89.000.

Witts, Alan G., to ITR International Time Limited. Time recorder. 4,333,085, Cl. 346-76.0PH.

Wolf, Karlheinz: *See—*
Kressner, Michael; Kolbe, Joachim; Bremer, Fritz; Pape, Georg; Wolf, Karlheinz; and Kummeler, Ferdinand, 4,332,587, Cl. 8-506.000.

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Janssen, Harvey W., 4,332,996, Cl. 219-76.140.

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Mueller, Dale A.; Ruminsky, Robert T.; Serber, Stephen L.; and Wolfgram, Rodger C., 4,332,141, Cl. 62-140.000.

Woloszczuk, Orest, to Crown Systems Company. Valve. 4,332,368, Cl. 251-30.000.

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Woodland International Corporation: *See—*
Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., 4,333,035, Cl. 313-411.000.

Woodman, Robert C., to Sunbeam Corporation. Portable freezer having mechanical means providing visual indication of firmness of contents. 4,332,485, Cl. 366-142.000.

Wooldridge, James E., to Allis-Chalmers Corporation. Plate electrode arrangement for an electrostatic precipitator. 4,332,597, Cl. 55-124.000.

Wormald, Philip J.; and Clemmow, Raymond J., to Padley & Venables Limited. Apparatus for use in drilling. 4,332,502, Cl. 403-343.000.

Worth, Joseph P.; and Fletcher, Bert B., to TRW, Inc. Electrical resistor for a printed circuit board and method of making the same. 4,333,069, Cl. 338-315.000.

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Wright, Donald C.; and Simpkin, Gordon T., to Pilkington Brothers Limited. Thermally treating articles with particulate material and apparatus therefor. 4,332,605, Cl. 65-114.000.

Wuermli, Arthur: *See—*
Bischofberger, Juerg; and Wuermli, Arthur, 4,332,059, Cl. 19-244.000.

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Harms, Wolfgang; Wunderlich, Klaus; and von Oertzen, Klaus, 4,332,938, Cl. 544-189.000.

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Wyoming Mineral Corporation: *See—*
Stana, Regis R., 4,332,776, Cl. 423-10.000.

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Barozzi, Gian P.; and Goreschi, Giancarlo, 4,332,488, Cl. 400-161.500.
Barozzi, Gian P.; and Horeschi, Giancarlo, 4,332,491, Cl. 400-208.000.

Xerox Corporation: *See—*
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., 4,332,464, Cl. 355-14.00C.
Costanza, Daniel W., 4,332,460, Cl. 355-8.000.

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Morishita, Tsuyoshi; Yagii, Koji; Inmaru, Kiyokazu; and Miyake, Kenji, 4,332,616, Cl. 75-243.000.

Yamada, Shigeo: *See—*
Ito, Tetsuro; Oizumi, Toshiro; and Yamada, Shigeo, 4,332,995, Cl. 219-69.00V.

Yamada, Yasuhiro: *See—*
Kobari, Harukuni; Yamada, Yasuhiro; Suzuki, Susumu; and Hibino, Chitoshi, 4,333,160, Cl. 364-900.000.

Yamaga, Minoru: *See—*
Tsuda, Singo; Yamaga, Minoru; and Kawai, Yuzuru, 4,332,867, Cl. 429-94.000.

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Ito, Hiroshi, 4,332,307, Cl. 181-256.000.

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Makuuchi, Keizo; Katakai, Akio; Hagiwara, Miyuki; Yamamoto, Tsutomu; Nakayama, Hiroyuki; and Takagi, Tohru, 4,332,657, Cl. 204-159.220.

Yamano, Shigemi: *See—*
Igarashi, Michiaki; Nakayama, Tetsuya; and Yamano, Shigemi, 4,332,517, Cl. 414-699.000.

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Nakahama, Syuhei; and Yamashita, Etsu, 4,333,001, Cl. 219-125.100.

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Yamazaki, Susumu; Nagoya, Yoshinari; and Shimizu, Masajiro, to Hitachi, Ltd. Drive force transmitting device for ice-making tray of automatic ice-making machine. 4,332,146, Cl. 62-353.000.

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Saitoh, Akira; Yamori, Akio; and Ibaragi, Toshio, 4,332,858, Cl. 428-412.000.

Yanagi, Hideki: *See—*
Kanaoka, Masaharu; Yanagi, Hideki; and Ogino, Shigeo, 4,332,717, Cl. 260-112.00R.

Yasuda, Sadami: *See—*
Hamada, Mitsuo; Yasuda, Sadami; and Hasegawa, Chiichiro, 4,332,844, Cl. 427-387.000.

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Oi, Naobumi; Itoh, Tadamasa; and Yasumasa, Yoshiaki, 4,332,591, Cl. 23-230.0PC.

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Yext, Walter F.: *See—*
Starner, William E.; and Yext, Walter F., 4,332,736, Cl. 260-403.000.

Yokomichi, Isao: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Someya, Sinzo; and Sakashita, Nobuyuki, 4,332,961, Cl. 560-62.000.

Yonezawa, Seiji; Sugiyama, Toshio; and Ojima, Masahiro, to Hitachi, Ltd. Optical information processor with prismatic correction of laser beam shape. 4,333,173, Cl. 369-45.000.

York, Robert A., to Flight Systems, Inc. Semiconductor heat sink mounting assembly. 4,333,101, Cl. 357-79.000.

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Takahashi, Kihei, 4,332,071, Cl. 29-408.000.

Yoshida, Koichi: *See—*
Hamanaka, Katsuhiko; Iwaisako, Toshiyuki; Masamoto, Junzo; and Yoshida, Koichi, 4,332,644, Cl. 203-46.000.

Yoshida, Motoaki: *See—*
Funaki, Masaaki; Yoshida, Motoaki; Shimauchi, Yoshinori; Fujioka, Akira; and Sakiyama, Kazuo, 4,332,859, Cl. 428-412.000.

Yoshida, Teruo: *See—*
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; Naruo, Masaki; Yoshida, Teruo; Siotu, Gisaburo; Sato, Yoshinori; and Toyama, Kenji, 4,332,211, Cl. 118-62.000.

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Hosomura, Hiroyoshi; Aota, Koichi; and Yoshimura, Eiji, 4,332,851, Cl. 428-325.000.

Yoshimura, Junjiro; Furukawa, Akira; and Ando, Takehiro, to Nippondenso Co., Ltd. Atmospheric pressure compensation device. 4,332,268, Cl. 137-81.100.

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Tsuji, Teruji; Hamashima, Yoshio; Yoshioka, Mitsuru; Narisada, Masayuki; Tanida, Hiroshi; Komeno, Taichiro; and Nagata, Wataru, 4,332,722, Cl. 260-245.400.

Young, Robert N.: *See—*
Belanger, Patrice C.; and Young, Robert N., 4,332,807, Cl. 424-274.000.
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Yu, Jing-Peir: *See—*
Blackmon, Lawrence E.; Dees, John R.; Kelly, Darrell A.; Mowe, Wayne T.; and Yu, Jing-Peir, 4,332,757, Cl. 264-103.000.

Yuhasz, Joseph M.; and O'Brien, Sean A. System for making frozen food article. 4,332,145, Cl. 62-342.000.
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Nakahara, Yasushi; Ohtomo, Tadasuke; Yurugi, Masahiro; Naitoh, Takumi; and Kaiho, Kenichi, 4,332,516, Cl. 414-288.000.
Zahnradfabrik Friedrichshafen, AG: *See*—
de Maight, Winfried, 4,332,303, Cl. 180-132.000.
Liska, Georg, 4,332,532, Cl. 417-273.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; and Kondo, Shinichi, 4,332,794, Cl. 424-180.000.
Zani, Gian M., to R. Bialetti & C. S.p.A. Pasta machine. 4,332,539, Cl. 425-151.000.
Zawodny, Arthur, to Keystone Camera Corporation. Film winding safety mechanism. 4,332,448, Cl. 354-213.000.
Zawodny, Arthur; and Krysicki, Jerzy, to Keystone Camera Corporation. Film advance and rewind mechanism. 4,332,449, Cl. 354-214.000.
Zech, Leonard E. Self-propelled landsailer. 4,332,395, Cl. 280-213.000.
Zemel, Jay N.; and Rahnamai, Hamid, to University of Pennsylvania, Trustees of the. Pyroelectric anemometer. 4,332,157, Cl. 73-26.000.
Zengel, Hans: *See*—
Wegerhoff, Arno; Zengel, Hans; Brodowski, Walter; Beck, Heinz; Seeberger, Ernst; Steenken, Gerhard; and Hillermeider, Karlheinz, 4,332,600, Cl. 65-2.000.
Wegerhoff, Arno; Zengel, Hans; Brodowski, Walter; Beck, Heinz; Seeberger, Ernst; Steenken, Gerhard; and Hillermeider, Karlheinz, 4,332,601, Cl. 65-2.000.
Zenith Radio Corporation: *See*—
Ciciora, Walter S., 4,333,109, Cl. 358-147.000.
Cordingley, Lowell A.; and Gutschick, Lester C., 4,333,033, Cl. 313-407.000.
DeVries, Adrian J., 4,333,065, Cl. 333-194.000.
Perdue, Terry A., 4,333,091, Cl. 340-365.00S.
Zimmerman, David M., to Chrysler Corporation. Fuels for internal combustion engines. 4,332,594, Cl. 44-53.000.
Zimmerman, Robert L.: *See*—
Schulze, Heinz; Zimmerman, Robert L.; and Waddill, Harold G., 4,332,720, Cl. 260-239.30R.
Zingheim, Steven C.; and Lunk, Hans E., to Raychem Corporation. Polymeric compositions. 4,332,855, Cl. 428-379.000.
Zingher, Arthur R. Optically annotatable recording film. 4,332,872, Cl. 430-8.000.
Zink, Rudolf, to Ciba-Geigy Corporation. Naphtholactam compounds. 4,332,937, Cl. 544-105.000.
Zitelli, Louis T., to Varian Associates, Inc. Image converter tube with contrast enhancing filter which partially absorbs internally reflected light. 4,333,030, Cl. 313-94.000.
Zito, Ronald R.: *See*—
Schultz, Stephen J.; and Zito, Ronald R., 4,332,607, Cl. 65-182.500.
Zoecon Corporation: *See*—
Anderson, Richard J.; and Leippe, Michael M., 4,332,944, Cl. 546-272.000.
Kohn, Gustave K.; and Baughn, Richard L., 4,332,792, Cl. 424-84.000.
Lee, Shy-fuh, 4,332,958, Cl. 560-35.000.
Zolffel, Michael: *See*—
Muller, Wolfgang H. E.; and Zolffel, Michael, 4,332,645, Cl. 203-75.000.
Zopfy, Rainer K.; Nolan, Robert F.; and Stapf, Carl J., to Raikon Research Corporation. Method and apparatus for automatically loading tape cartridges with supply tape. 4,332,355, Cl. 242-56.00R.
Zwies, Alfred: *See*—
Levy, David E.; Zwies, Alfred; and Duffy, Thomas E., 4,332,244, Cl. 128-205.250.
Zygo Corporation: *See*—
Demarest, Frank C., 4,332,475, Cl. 356-386.000.
21st Century Envelope Co. Inc.: *See*—
Kronman, Albert F., 4,332,346, Cl. 229-73.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF JUNE, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ackerman, Myron H. Folded tie liner. Re. 30,950, Cl. 2-144.000.

Acutherm, Inc.: *See—*
Vance, Robert L.; and Noll, Robert W., Re. 30,953, Cl. 236-49.000.

Carson, Edward H. D.: *See—*
Smith, Royal; and Carson, Edward H. D., Re. 30,954, Cl. 297-118.000.

Cuckson, Eric E.; and Jones, Arthur L., to Scovill Inc. Thermoplastic strips for sliding clasp fasteners. Re. 30,951, Cl. 24-205.13R.

Feistel, Horst, to International Business Machines Corporation. Variant key matrix cipher system. Re. 30,957, Cl. 178-22.170.

Imperial Chemical Industries Limited: *See—*
Stanistreet, Harold P., Re. 30,955, Cl. 156-308.200.

International Business Machines Corporation: *See—*
Feistel, Horst, Re. 30,957, Cl. 178-22.170.

Jones, Arthur L.: *See—*
Cuckson, Eric E.; and Jones, Arthur L., Re. 30,951, Cl. 24-205.13R.

Noll, Robert W.: *See—*
Vance, Robert L.; and Noll, Robert W., Re. 30,953, Cl. 236-49.000.

Schulze, Ehrhart, to Steigler, Karl Heinz. Welding machine for thermoplastic web. Re. 30,956, Cl. 156-515.000.

Scovill Inc.: *See—*
Cuckson, Eric E.; and Jones, Arthur L., Re. 30,951, Cl. 24-205.13R.

Smith, Royal; and Carson, Edward H. D. Wheelchairs. Re. 30,954, Cl. 297-118.000.

Stanistreet, Harold P., to Imperial Chemical Industries Limited. Fibrous product. Re. 30,955, Cl. 156-308.200.

Steigler, Karl Heinz: *See—*
Schulze, Ehrhart, Re. 30,956, Cl. 156-515.000.

Vance, Robert L.; and Noll, Robert W., to Acutherm, Inc. Thermally actuated diffuser. Re. 30,953, Cl. 236-49.000.

Western Rock Bit Company Limited: *See—*
White, Kenneth M., Re. 30,952, Cl. 175-410.000.

White, Kenneth M., to Western Rock Bit Company Limited. Percussion drill bit. Re. 30,952, Cl. 175-410.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Ogata, Taskashi; Namihisa, Shoichiro; and Fujii, Tsumoru, to Nippon Mining Co., Ltd. Process for separating cobalt and nickel from a solution containing cobalt and nickel. B1 4,246,240, Cl. 423-139.

Nippon Mining Co., Ltd.: *See—*
Ogata, Taskashi; Namihisa, Shoichiro; and Fujii, Tsumoru, B1 4,246,240, Cl. 423-139.

Namihisa, Shoichiro: *See—*
Ogata, Taskashi; Namihisa, Shoichiro; and Fujii, Tsumoru, B1 4,246,240, Cl. 423-139.

Fujii, Tsumoru: *See—*
Ogata, Taskashi; Namihisa, Shoichiro; and Fujii, Tsumoru, B1 4,246,240, Cl. 423-139.

LIST OF DESIGN PATENTEES

AB Volvo Penta: *See—*
Borgersen, Kjell; and Brandt, Lennart, 264,724, Cl. D15-149.000.

Adamson, Gerhard, to Union Carbide Corporation. Plastic bag holding rack. 264,650, 6-1-82, Cl. D6-85.000.

Adamson, Gerhard, to Union Carbide Corp. Plastic bag holding rack. 264,651, 6-1-82, Cl. D6-85.000.

Adamson, Gerhard, to Union Carbide Corp. Plastic bag holding rack. 264,653, 6-1-82, Cl. D6-114.000.

Aktiebolaget Electrolux: *See—*
Andersson, Ingvar K., 264,756, Cl. D25-73.000.

American Standard Inc.: *See—*
Bengtson, Hertha A., 264,749, Cl. D23-61.000.

Andersson, Ingvar K., to Aktiebolaget Electrolux. Beam for frame structure. 264,756, 6-1-82, Cl. D25-73.000.

Arnesen, Richard H., to Gold Medal, Inc. Lounge chair. 264,645, 6-1-82, Cl. D6-37.000.

Astle, Henry; and Pertle, John E., to Tri Tool, Inc. Pipe end preparation tool. 264,678, 6-1-82, Cl. D8-61.000.

Austin, John J., to Champion International Corporation. Container blank. 264,687, 6-1-82, Cl. D9-433.000.

Austin, John J., to Champion International Corporation. Container blank. 264,688, 6-1-82, Cl. D9-433.000.

Bagwell, Connice W. Top for a drink cup. 264,690, 6-1-82, Cl. D9-454.000.

Baker, Robert. Portable orthopedic footstool. 264,644, 6-1-82, Cl. D6-32.000.

Bengtson, Hertha A., to American Standard Inc. Combined lavatory and support pedestal. 264,749, 6-1-82, Cl. D23-61.000.

Berney, Sheldon; and Howard, John, to Reliance Products Ltd. Fluid container. 264,760, 6-1-82, Cl. D34-39.000.

Bettis, James F., to Skivette Corporation. Boat. 264,707, 6-1-82, Cl. D12-300.000.

Bird Electronic Corporation: *See—*
Lesyk, Leo, 264,708, Cl. D13-4.000.
Lesyk, Leo, 264,709, Cl. D13-4.000.

Bishop, Kenneth: *See—*
Summers, Michael P.; and Bishop, Kenneth, 264,722, Cl. D15-138.000.

Bisk, Leonard; and Rogahn, Gunther, to Independent Products Company, Inc. Spring clip. 264,662, 6-1-82, Cl. D6-257.000.

Borgersen, Kjell; and Brandt, Lennart, to AB Volvo Penta. Transmission for boats. 264,724, 6-1-82, Cl. D15-149.000.

BQP Industries, Inc.: *See—*
Mackes, Ronald C., 264,695, Cl. D11-145.000.

Brandt, Lennart: *See—*
Borgersen, Kjell; and Brandt, Lennart, 264,724, Cl. D15-149.000.

Brunner, Josef: *See—*
Rock, Erich; and Brunner, Josef, 264,660, Cl. D6-191.000.

Canon Kabushiki Kaisha: *See—*
Tokuda, Hiroyuki, 264,725, Cl. D16-31.000.

Carlyon, Donald J. Type font. 264,730, 6-1-82, Cl. D18-26.000.
Cassina S.p.A.: *See—*
Rodriquez, Rodrigo, 264,648, Cl. D6-67.000.
Cataneo, Ralph J.: *See—*
Jedzinak, John E.; Cataneo, Ralph J.; and Fotiu, Eustace, 264,757, Cl. D28-7.000.
Champion International Corporation: *See—*
Austin, John J., 264,687, Cl. D9-433.000.
Austin, John J., 264,688, Cl. D9-433.000.
Cooper, Marvin, to Dynamic Classics, Ltd. Hand grip exerciser. 264,737, 6-1-82, Cl. D21-198.000.
Cooper, Marvin, to Dynamic Classics, Ltd. Coil exerciser. 264,738, 6-1-82, Cl. D21-198.000.
Cooper, Marvin, to Dynamic Classics, Ltd. Adjustable hand grip exerciser. 264,739, 6-1-82, Cl. D21-198.000.
Corner, Michael R., to Dunlop Limited. Tire. 264,701, 6-1-82, Cl. D12-142.000.
Coventry Motor & Sundries Limited: *See—*
Grindlay, John S. F., 264,674, Cl. D8-13.000.
Cycles Peugeot: *See—*
Geney, Gilbert, 264,700, Cl. D12-114.000.
Datasaab AB: *See—*
Freijd, Ingvar, 264,763, Cl. D99-28.000.
Freijd, Ingvar, 264,764, Cl. D99-28.000.
Davis, Paul, to Sweetheart Plastics, Inc. Packaging cup. 264,686, 6-1-82, Cl. D9-429.000.
Dekarski, Michael A. Basket for computer forms or the like. 264,761, 6-1-82, Cl. D34-42.000.
de Polo, Lydia; and Dunbar, Jack G., to General Mills, Inc. Shelf unit or similar article. 264,658, 6-1-82, Cl. D6-186.000.
Ducros, Gilbert. Bottle. 264,685, 6-1-82, Cl. D9-390.000.
Dunbar, Jack G.: *See—*
de Polo, Lydia; and Dunbar, Jack G., 264,658, Cl. D6-186.000.
Dunlop Limited: *See—*
Corner, Michael R., 264,701, Cl. D12-142.000.
Nakasaki, Eiji, 264,703, Cl. D12-146.000.
Dynamic Classics, Ltd.: *See—*
Cooper, Marvin, 264,737, Cl. D21-198.000.
Cooper, Marvin, 264,738, Cl. D21-198.000.
Cooper, Marvin, 264,739, Cl. D21-198.000.
E.G.O. Elektro-Gerate Blanc und Fischer: *See—*
Schreder, Felix, 264,673, Cl. D7-124.000.
Ehlers, Martin R. Air compressor housing. 264,719, 6-1-82, Cl. D15-9.000.
Elkhart Rivet & Register Co., Inc.: *See—*
Searer, Vernon A., 264,683, Cl. D8-354.000.
Entex Industries, Inc.: *See—*
Hanzawa, Tsuneo, 264,732, Cl. D21-13.000.
Evans, Robert P.; and Weiss, Dale F., to Transequip, Inc. Air cargo container. 264,641, 6-1-82, Cl. D3-30.100.
Ford, Lee M. Versatile electrical terminal block. 264,711, 6-1-82, Cl. D13-24.000.
Fotiu, Eustace: *See—*
Jedzinak, John E.; Cataneo, Ralph J.; and Fotiu, Eustace, 264,757, Cl. D28-7.000.
Freijd, Ingvar, to Datasaab AB. Indoor customer activated banking machine terminal or the like. 264,763, 6-1-82, Cl. D99-28.000.
Freijd, Ingvar, to Datasaab AB. Outdoor customer activated banking machine terminal or the like. 264,764, 6-1-82, Cl. D99-28.000.
Friedman, Alan H., to Syracuse China Corporation. Dinner plate or similar article. 264,670, 6-1-82, Cl. D7-35.000.
Friedman, Alan H., to Syracuse China Corporation. Dinner plate or similar article. 264,671, 6-1-82, Cl. D7-35.000.
Funkhouser, Gene G. Fish hook sharpener. 264,679, 6-1-82, Cl. D8-62.000.
Fuse, Michio, to Kabushikikaisha AichidenkikosaKusho. Electric food slicer. 264,720, 6-1-82, Cl. D15-97.000.
Gardisette International AG: *See—*
Stocker, Hans, 264,762, Cl. D47-6.00E.
General Mills, Inc.: *See—*
de Polo, Lydia; and Dunbar, Jack G., 264,658, Cl. D6-186.000.
Geney, Gilbert, to Cycles Peugeot. Cable guide for variable speed transmission such as derailleurs. 264,700, 6-1-82, Cl. D12-114.000.
GKN-Stenman AB: *See—*
Widen, Bo G., 264,680, Cl. D8-343.000.
Gold Medal, Inc.: *See—*
Arnesen, Richard H., 264,645, Cl. D6-37.000.
Golubski, Janet L.; and Golubski, Ralph E. Taco server. 264,668, 6-1-82, Cl. D7-21.000.
Golubski, Ralph E.: *See—*
Golubski, Janet L.; and Golubski, Ralph E., 264,668, Cl. D7-21.000.
Greenman, Harry D., to Multi-Commerce U.S.A. Ltd. Invertible table and rocker combination. 264,642, 6-1-82, Cl. D6-3.000.
Griffin, Leon L. Combination holder and set of skewers or the like. 264,672, 6-1-82, Cl. D7-73.000.
Grindlay, John S. F., to Coventry Motor & Sundries Limited. Rake head. 264,674, 6-1-82, Cl. D8-13.000.
H. J. Langen & Sons Limited: *See—*
Langen, Marinus J. M.; and Strauss, Edgars H., 264,654, Cl. D6-143.000.
Halcyon, Inc.: *See—*
Volkland, Charles; and Zumbahlen, Louis H., Jr., 264,691, Cl. D10-75.000.
Hamada, Masanori; Saigo, Yoshiyuki; Mishiro, Benito; and Ohta, Kikuo, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 264,717, 6-1-82, Cl. D14-68.000.
Hanzawa, Tsuneo, to Entex Industries, Inc. Electronic hand-held hockey game housing or the like. 264,732, 6-1-82, Cl. D21-13.000.
Hara, Kunio; and Horie, Hideyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying machine or the like. 264,726, 6-1-82, Cl. D16-31.000.
Hara, Kunio: *See—*
Matsuzaka, Yozo; and Hara, Kunio, 264,727, Cl. D16-31.000.
HCR Incorporated: *See—*
Smith, George R., 264,751, Cl. D23-140.000.
Helior S.A.: *See—*
Rodier, Pierre, 264,693, Cl. D11-106.000.
Horie, Hideyuki: *See—*
Hara, Kunio; and Horie, Hideyuki, 264,726, Cl. D16-31.000.
Horpestad, Melvin V. Fireplace insert. 264,750, 6-1-82, Cl. D23-95.000.
Hoshino, Kunio, to Matsushita Electric Industrial Co., Ltd. Clock radio. 264,718, 6-1-82, Cl. D14-70.000.
Howard, John: *See—*
Berney, Sheldon; and Howard, John, 264,760, Cl. D34-39.000.
Hunckler, John P.: *See—*
Hunckler, Paul J.; and Hunckler, John P., 264,684, Cl. D9-346.000.
Hunckler, Paul J.; and Hunckler, John P., to Hunckler Products, Inc. Packaging carton. 264,684, 6-1-82, Cl. D9-346.000.
Hunckler Products, Inc.: *See—*
Hunckler, Paul J.; and Hunckler, John P., 264,684, Cl. D9-346.000.
Inaga, Hisashi; and Nogawa, Masato, to Kioritz Corporation. Blade for power scythe. 264,675, 6-1-82, Cl. D8-20.000.
Independent Products Company, Inc.: *See—*
Bisk, Leonard; and Rogahn, Gunther, 264,662, Cl. D6-257.000.
Iwasaki, Osamu, to Slik Tripod Co., Ltd. Camera tripod or the like. 264,728, 6-1-82, Cl. D16-45.000.
Jedzinak, John E.; Cataneo, Ralph J.; and Fotiu, Eustace, to Revlon, Inc. Mascara applicator. 264,757, 6-1-82, Cl. D28-7.000.
Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Brunner, Josef, 264,660, Cl. D6-191.000.
KabushikikaishaAichidenkikosaKusho: *See—*
Fuse, Michio, 264,720, Cl. D15-97.000.
Kaga, Yukio, to Yokohama Rubber Co., Ltd., The. Automobile tire. 264,702, 6-1-82, Cl. D12-142.000.
Kawasaki Steel Corporation: *See—*
Tsujimoto, Eiichi, 264,723, Cl. D15-145.000.
Keller, Huey T. Combined dual armoire and light bridge unit. 264,655, 6-1-82, Cl. D6-164.000.
Kioritz Corporation: *See—*
Inaga, Hisashi; and Nogawa, Masato, 264,675, Cl. D8-20.000.
Kobayashi, Yoshiaki, to Sharp Corporation. Electronic calculator with timepiece. 264,729, 6-1-82, Cl. D18-2.000.
Kupperman, Dennis: *See—*
Kupperman, Sam; and Kupperman, Dennis, 264,640, Cl. D1-99.000.
Kupperman, Sam; and Kupperman, Dennis, to RB Toy Development Co. Handle stick for a confectionery product. 264,640, 6-1-82, Cl. D1-99.000.
Lancaster Fabricating Co., Inc.: *See—*
Schilling, Glenn F.; and Varble, James C., 264,759, Cl. D34-17.000.
Landstingens Inkopscentral, Lic.: *See—*
Olson, Birgitta, 264,755, Cl. D24-49.000.
Langen, Marinus J. M.; and Strauss, Edgars H., to H. J. Langen & Sons Limited. Checkout counter. 264,654, 6-1-82, Cl. D6-143.000.
Leotta, Samuel S., to Warner-Lambert Company. Pharmaceutical dispensing cabinet. 264,752, 6-1-82, Cl. D24-1.100.
Lesyk, Leo, to Bird Electronic Corporation. Radiator for RF line termination. 264,708, 6-1-82, Cl. D13-4.000.
Lesyk, Leo, to Bird Electronic Corporation. Radiator for an RF line termination. 264,709, 6-1-82, Cl. D13-4.000.
Mackes, Ronald C., to BQP Industries, Inc. Miniature plastic greenhouse. 264,695, 6-1-82, Cl. D11-145.000.
Markus, Frederick E. Shelving unit. 264,659, 6-1-82, Cl. D6-186.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Hamada, Masanori; Saigo, Yoshiyuki; Mishiro, Benito; and Ohta, Kikuo, 264,717, Cl. D14-68.000.
Hoshino, Kunio, 264,718, Cl. D14-70.000.
Nakajima, Iwao; and Mishiro, Benito, 264,716, Cl. D14-68.000.
Matsuzaka, Yozo; and Hara, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying machine or the like. 264,727, 6-1-82, Cl. D16-31.000.
Merino, Dennis H.; and Ralph, J. Clyde. Water basketball game goal. 264,740, 6-1-82, Cl. D21-201.000.
Messrs. Willibald Grammer: *See—*
Pelly, Chuck, 264,643, Cl. D6-31.000.
Miller, David L. Bag fastener or the like. 264,689, 6-1-82, Cl. D9-434.000.
Mills, Truett P., to Questor Corporation. Putter. 264,742, 6-1-82, Cl. D21-217.000.
Mills, Truett P., to Questor Corp. Putter. 264,743, 6-1-82, Cl. D21-217.000.
Mills, Truett P., to Questor Corporation. Putter. 264,744, 6-1-82, Cl. D21-217.000.
Mills, Truett P., to Questor Corporation. Putter. 264,745, 6-1-82, Cl. D21-217.000.
Mishiro, Benito: *See—*
Hamada, Masanori; Saigo, Yoshiyuki; Mishiro, Benito; and Ohta, Kikuo, 264,717, Cl. D14-68.000.
Nakajima, Iwao; and Mishiro, Benito, 264,716, Cl. D14-68.000.

Monteith, John W. Combined winch mount and draw bar adapter for vehicles. 264,697, 6-1-82, Cl. D34-35.000.

Multi-Commerce U.S.A. Ltd.: *See—*
Greenman, Harry D., 264,642, Cl. D6-3.000.

Nakajima, Iwao; and Mishiro, Benito, to Matsushita Electric Industrial Co., Ltd. Clock radio. 264,716, 6-1-82, Cl. D14-68.000.

Nakasaki, Eiji, to Dunlop Limited. Tire. 264,703, 6-1-82, Cl. D12-146.000.

Nogawa, Masato: *See—*
Inaga, Hisashi; and Nogawa, Masato, 264,675, Cl. D8-20.000.

Northern Telecom Limited: *See—*
Trussler, Peter D. H., 264,715, Cl. D14-60.000.

Nozel, Richard J.: *See—*
Trombley, Ulric W.; and Nozel, Richard J., 264,705, Cl. D12-190.000.
Trombley, Ulric W.; and Nozel, Richard J., 264,706, Cl. D12-190.000.

Nugroho, Samuel. Playing card. 264,733, 6-1-82, Cl. D21-42.000.

Nugroho, Samuel. Set of playing cards. 264,734, 6-1-82, Cl. D21-42.000.

Ochwat, Richard. Beverage mug. 264,663, 6-1-82, Cl. D7-5.000.

Ochwat, Richard. Beverage mug. 264,664, 6-1-82, Cl. D7-5.000.

Ochwat, Richard. Beverage mug. 264,665, 6-1-82, Cl. D7-5.000.

Ochwat, Richard. Beverage mug. 264,666, 6-1-82, Cl. D7-5.000.

Ochwat, Richard. Beverage mug. 264,667, 6-1-82, Cl. D7-5.000.

Ocker, Anna M. Novelty binoculars. 264,735, 6-1-82, Cl. D21-59.000.

Ohta, Kikuo: *See—*
Hamada, Masanori; Saigo, Yoshiyuki; Mishiro, Benito; and Ohta, Kikuo, 264,717, Cl. D14-68.000.

O'Leary, Donald B., to RCA Corporation. Video disc player. 264,712, 6-1-82, Cl. D14-1.000.

O'Leary, Donald B., to RCA Corporation. Video disc player. 264,713, 6-1-82, Cl. D14-1.000.

Olson, Birgitta, to Landstingens Inkopscentral, Lic. Securing device for catheter. 264,755, 6-1-82, Cl. D24-49.000.

Orth, Wallace E., to Skee-Bike, Inc. Roller skate. 264,746, 6-1-82, Cl. D21-226.000.

Oscarson, Carl H., to Pace Industries Inc. Cabinet. 264,656, 6-1-82, Cl. D6-168.000.

Otto, Walter K., to Vaughan-Bassett Furniture Company, Inc. Furniture panel. 264,661, 6-1-82, Cl. D6-193.000.

Pace Industries Inc.: *See—*
Oscarson, Carl H., 264,656, Cl. D6-168.000.

Patton, John C. Kicking-practice football. 264,741, 6-1-82, Cl. D21-204.000.

Pelly, Chuck, to Messrs. Willibald Grammer. Office chair. 264,643, 6-1-82, Cl. D6-31.000.

Perry, Leroy R., Jr. Scissors. 264,677, 6-1-82, Cl. D8-57.000.

Pertle, John E.: *See—*
Astle, Henry; and Pertle, John E., 264,678, Cl. D8-61.000.

Pettiner, Rosemary T. Coffee table. 264,657, 6-1-82, Cl. D6-177.000.

Pierre Fabre S.A.: *See—*
Vitrac, Jean-Pierre, 264,754, Cl. D24-36.000.

Questor Corporation: *See—*
Mills, Truett P., 264,742, Cl. D21-217.000.
Mills, Truett P., 264,743, Cl. D21-217.000.
Mills, Truett P., 264,744, Cl. D21-217.000.
Mills, Truett P., 264,745, Cl. D21-217.000.

Rahn, Kenneth E. Firewood cart. 264,696, 6-1-82, Cl. D34-24.000.

Ralph, J. Clyde: *See—*
Merino, Dennis H.; and Ralph, J. Clyde, 264,740, Cl. D21-201.000.

Rasmussen, Aaron P. Housing for abrasive belt sanding machine. 264,721, 6-1-82, Cl. D15-126.000.

RB Toy Development Co.: *See—*
Kupperman, Sam; and Kupperman, Dennis, 264,640, Cl. D1-99.000.

RCA Corporation: *See—*
O'Leary, Donald B., 264,712, Cl. D14-1.000.
O'Leary, Donald B., 264,713, Cl. D14-1.000.

Rehberg, William V. Motorcycle fairing or similar article. 264,704, 6-1-82, Cl. D12-186.000.

Reliance Products Ltd.: *See—*
Berney, Sheldon; and Howard, John, 264,760, Cl. D34-39.000.

Revlon, Inc.: *See—*
Jedzinak, John E.; Cataneo, Ralph J.; and Fotiu, Eustace, 264,757, Cl. D28-7.000.

Rock, Erich; and Brunner, Josef, to Julius Blum Gesellschaft m.b.H. Drawer. 264,660, 6-1-82, Cl. D6-191.000.

Rodier, Pierre, to Helior S.A. Medal. 264,693, 6-1-82, Cl. D11-106.000.

Rodriquez, Rodrigo, to Cassina S.p.A. Seat. 264,648, 6-1-82, Cl. D6-67.000.

Rogahn, Gunther: *See—*
Bisk, Leonard; and Rogahn, Gunther, 264,662, Cl. D6-257.000.

Saigo, Yoshiyuki: *See—*
Hamada, Masanori; Saigo, Yoshiyuki; Mishiro, Benito; and Ohta, Kikuo, 264,717, Cl. D14-68.000.

Sandblom, Pearl. Sunburst ring crown. 264,692, 6-1-82, Cl. D11-89.000.

Saporiti, Giorgio. Armchair. 264,649, 6-1-82, Cl. D6-71.000.

Schilling, Glenn F.; and Varble, James C., to Lancaster Fabricating Co., Inc. Cart for storing and transporting solid fuels including wood logs and coal. 264,759, 6-1-82, Cl. D34-17.000.

Schreder, Felix, to E.G.O. Elektro-Gerate Blanc und Fischer. Cooking appliance. 264,673, 6-1-82, Cl. D7-124.000.

Searer, Vernon A., to Elkhart Rivet & Register Co., Inc. Wire and plumbing protection device. 264,683, 6-1-82, Cl. D8-354.000.

Seltzer, Marc S. Walking toy. 264,747, 6-1-82, Cl. D21-240.000.

Sharp Corporation: *See—*
Kobayashi, Yoshiaki, 264,729, Cl. D18-2.000.

Shauan, Daniel D. Floatable lounge chair. 264,646, 6-1-82, Cl. D6-37.000.

Shu, David F., to TDS, Inc. C.A.T.V. Signal splitter. 264,710, 6-1-82, Cl. D13-11.000.

Shuman, Bernard E. Display card holder. 264,731, 6-1-82, Cl. D20-40.000.

Skee-Bike, Inc.: *See—*
Orth, Wallace E., 264,746, Cl. D21-226.000.

Skivette Corporation: *See—*
Bettis, James F., 264,707, Cl. D12-300.000.

Slik Tripod Co., Ltd.: *See—*
Iwasaki, Osamu, 264,728, Cl. D16-45.000.

Smith, George R., to HCR Incorporated. Conditioned air vestibule. 264,751, 6-1-82, Cl. D23-140.000.

Sokolowski, Bronislaw. Awl. 264,676, 6-1-82, Cl. D8-47.000.

Sovey, Sam F. Tree holder. 264,652, 6-1-82, Cl. D6-105.000.

Stocker, Hans, to Gardisette International AG. Curtain material. 264,762, 6-1-82, Cl. D47-6.00E.

Strauss, Edgars H.: *See—*
Langen, Marinus J. M.; and Strauss, Edgars H., 264,654, Cl. D6-143.000.

Summers, Michael P.; and Bishop, Kenneth. Jeweler's shield. 264,722, 6-1-82, Cl. D15-138.000.

Sweetheart Plastics, Inc.: *See—*
Davis, Paul, 264,686, Cl. D9-429.000.

Syracuse China Corporation: *See—*
Friedman, Alan H., 264,670, Cl. D7-35.000.
Friedman, Alan H., 264,671, Cl. D7-35.000.
Warren, Frank A., 264,669, Cl. D7-35.000.

Takahashi, Yuzo. Lattice module. 264,694, 6-1-82, Cl. D11-131.000.

TDS, Inc.: *See—*
Shu, David F., 264,710, Cl. D13-11.000.

Theodore, Paris. Holster. 264,748, 6-1-82, Cl. D22-13.000.

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Tokuda, Hiroyuki, to Canon Kabushiki Kaisha. Electrophotographic copier. 264,725, 6-1-82, Cl. D16-31.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hara, Kunio; and Horie, Hideyuki, 264,726, Cl. D16-31.000.
Matsuzaka, Yozo; and Hara, Kunio, 264,727, Cl. D16-31.000.

Transequip, Inc.: *See—*
Evans, Robert P.; and Weiss, Dale F., 264,641, Cl. D3-30.100.

Tri Tool, Inc.: *See—*
Astle, Henry; and Pertle, John E., 264,678, Cl. D8-61.000.

Trombley, Ulric W.; and Nozel, Richard J. Trim piece for an automobile hood. 264,705, 6-1-82, Cl. D12-190.000.

Trombley, Ulric W.; and Nozel, Richard J. Trim piece for an automobile hood. 264,706, 6-1-82, Cl. D12-190.000.

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Turley, Roger W. Container for pelleted drugs. 264,681, 6-1-82, Cl. D9-339.000.

Turner, Lynn. Rocking chair. 264,647, 6-1-82, Cl. D6-49.000.

Tyree, Jon. Telephone. 264,714, 6-1-82, Cl. D14-53.000.

Union Carbide Corporation: *See—*
Adamson, Gerhard, 264,650, Cl. D6-85.000.
Adamson, Gerhard, 264,651, Cl. D6-85.000.
Adamson, Gerhard, 264,653, Cl. D6-114.000.

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Varble, James C.: *See—*
Schilling, Glenn F.; and Varble, James C., 264,759, Cl. D34-17.000.

Vaughan-Bassett Furniture Company, Inc.: *See—*
Otto, Walter K., 264,661, Cl. D6-193.000.

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Walker, Lois J. Holder for skeins of floss. 264,758, 6-1-82, Cl. D28-64.000.

Warner-Lambert Company: *See—*
Leotta, Samuel S., 264,752, Cl. D24-1.100.

Warren, Frank A., to Syracuse China Corporation. Dinner plate or similar article. 264,669, 6-1-82, Cl. D7-35.000.

Watkins, Ralph A. Utility carrier cart. 264,699, 6-1-82, Cl. D12-105.000.

Weiss, Dale F.: *See—*
Evans, Robert P.; and Weiss, Dale F., 264,641, Cl. D3-30.100.

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Kaga, Yukio, 264,702, Cl. D12-142.000.

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San Joaquin Rose Co.: *See*—
Bailey, Dorothy J. S., 4,853, Cl. 11.000.
Bailey, Dorothy J. S., 4,854, Cl. 22.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 1ST DAY OF JUNE, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Achorn, Frank P.; and McGill, Kenneth E. Ammonium polyphosphate sulfate fertilizers from wet-process phosphoric acid. T101,901, 6-1-82, Cl. 71-36.000.

Cannan, Terrance M.; and McDonald, Lloyd A. Pesticidal composition and method for treating seeds prior to planting. T101,902, 6-1-82, Cl. 424-81.000.

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CLASSIFICATION OF PATENTS

ISSUED JUNE 1, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

105 4,332,033
144 Re.30,950
237 4,332,034

CLASS 3

1.4 4,332,035
1.91 4,332,036
4,332,037
12.6 4,332,038
13 4,332,039

CLASS 4

300 4,332,040
316 4,332,041

CLASS 5

424 4,332,042
450 4,332,043
453 4,332,044

CLASS 6

1 4,332,045

CLASS 7

146 4,332,046

CLASS 8

94.27 4,332,584
114.6 4,332,585
158 4,332,047
186 4,332,586
506 4,332,587
526 4,332,588
557 4,332,589

CLASS 15

246 4,332,050
328 4,332,051

CLASS 16

30 4,332,052
197 4,332,054
335 4,332,055
341 4,332,056
370 4,332,053

CLASS 17

55 4,332,057

CLASS 19

106 R 4,332,058
244 4,332,059

CLASS 23

230 A 4,332,590
230 PC 4,332,591
301 4,332,592

CLASS 24

67.9 4,332,060
205.13 R Re.30,951
263 DA 4,332,062
343 4,332,061

CLASS 26

3 4,332,063

CLASS 27

12 4,332,064

CLASS 28

225 4,332,065

CLASS 29

26 R 4,332,066
116 R 4,332,067
157.3 A 4,332,069
157.3 R 4,332,068
408 4,332,071
4,332,072
421 R 4,332,073
527.4 4,332,074
571 4,332,075
4,332,076
4,332,077
578 4,332,070
580 4,332,078
598 4,332,079
611 4,332,080
612 4,332,081
622 4,332,082
749 4,332,083

CLASS 30

380 4,332,084

CLASS 33

126.5 4,332,086
137 R 4,332,087
143 R 4,332,085
169 R 4,332,088
184.5 4,332,089
366 4,332,090

CLASS 34

1 4,332,091
27 4,332,092

CLASS 37

2 R 4,332,093
103 4,332,094

CLASS 40

158 R 4,332,095
486 4,332,096

CLASS 42

50 4,332,097
84 4,332,098

CLASS 43

15 4,332,099
113 4,332,100

CLASS 44

51 4,332,593
53 4,332,594
72 4,332,595

CLASS 46

9 4,332,101
61 4,332,102
81 4,332,103
206 4,332,104

CLASS 47

1 R 4,332,105
1.5 4,332,106
4,332,107

CLASS 49

44 4,332,108

CLASS 51

127 4,332,109
165.78 4,332,110

CLASS 52

1 4,332,111
2 4,332,112
6 4,332,113
36 4,332,114
66 4,332,115
82 4,332,116
94 4,332,117
263 4,332,118
772 4,332,119

CLASS 53

245 4,332,120
251 4,332,121
425 4,332,122
475 4,332,123
540 4,332,124

CLASS 55

18 4,332,596
124 4,332,597

CLASS 56

1 4,332,125
10.2 4,332,126
4,332,127
27.5 4,332,128

CLASS 57

105 4,332,129
213 4,332,131
279 4,332,130
280 4,332,132

CLASS 60

39.75 4,332,133
464 4,332,134

CLASS 62

3 4,332,135
17 4,332,598
54 4,332,136
81 4,332,137
101 4,332,139
123 4,332,140
140 4,332,141
152 4,332,142
199 4,332,138
284 4,332,143
324.1 4,332,144
342 4,332,145
353 4,332,146
542 4,332,599

CLASS 65

2 4,332,600
4,332,601
12 4,332,602
27 4,332,603
4,332,604
114 4,332,605
158 4,332,606
182.5 4,332,607
348 4,332,608

CLASS 66

87 4,332,149
232 4,332,150

CLASS 68

5 E 4,332,151
171 4,332,152

CLASS 70

339 4,332,153

CLASS 71

27 4,332,609
28 4,332,610
92 4,332,611
95 4,332,612
105 4,332,613
118 4,332,614

CLASS 72

31 4,332,154
66 4,332,155
264 4,332,156

CLASS 73

26 4,332,157
40.5 R 4,332,170
59 4,332,158
64.2 4,332,159
84 4,332,160
104 4,332,161
117.3 4,332,162
119 A 4,332,163
193 R 4,332,164
204 4,332,165
299 4,332,166
304 C 4,332,167
487 4,332,169
626 4,332,171
707 4,332,172
825 4,332,175
861.89 4,332,173
862.65 4,332,174

CLASS 74

110 4,332,176
491 4,332,177

CLASS 75

1 TI 4,332,615
214 4,332,617
243 4,332,616

CLASS 81

439 4,332,178

CLASS 83

137 4,332,179
872 4,332,180

CLASS 84

1.01 4,332,181
4,332,182
1.26 4,332,183
173 4,332,184

CLASS 86

36 4,332,185

CLASS 91

1 4,332,186

CLASS 98

2.17 4,332,187

CLASS 99

323.5 4,332,188
339 4,332,189
538 4,332,190

CLASS 100

162 R 4,332,191
168 4,332,192

CLASS 101

93.01 4,332,193
216 4,332,194
349 4,332,195
365 4,332,196
415.1 4,332,197
416 B 4,332,198

CLASS 102

276 4,332,199

CLASS 104

12 4,332,200

CLASS 105

167 4,332,201
199 CB 4,332,202
422 4,332,203

CLASS 106

84 4,332,618
87 4,332,619

CLASS 108

1 4,332,204
60 4,332,205

CLASS 110

203 4,332,206
347 4,332,207

CLASS 112

277 4,332,208
287 4,332,209

CLASS 116

173 4,332,210

CLASS 118

62 4,332,211
202 4,332,212
211 4,332,213

CLASS 119

1 4,332,214
14.49 4,332,215
22 4,332,216
29 4,332,217

CLASS 122

4 D 4,332,218

CLASS 123

3 4,332,219
41.08 4,332,221
41.7 4,332,220
65 B 4,332,229
90.17 4,332,222
253 4,332,223
254 4,332,224
440 4,332,225
494 4,332,226
502 4,332,227
557 4,332,228

CLASS 124

20 R 4,332,230
24 R 4,332,231
4,332,232
35 A 4,332,233
73 4,332,234

CLASS 126

120 4,332,235
121 4,332,236
247 4,332,237
425 4,332,238
4,332,239
4,332,240
450 4,332,241

CLASS 127

19 4,332,621
41 4,332,622
46.2 4,332,623

CLASS 128

3 4,332,242
132 R 4,332,243
205.25 4,332,244
207.17 4,332,245
214 C 4,332,247
214 F 4,332,246
214 R 4,332,248
218 NV 4,332,249
239 4,332,250
263 4,332,251
275 4,332,252
287 4,332,253
344 4,332,254
350 V 4,332,255
419 PT 4,332,256
640 4,332,257
666 4,332,258
786 4,332,259
804 4,332,260

CLASS 130

27 P 4,332,262
27 R 4,332,261

CLASS 132

73 4,332,263
91 4,332,559

CLASS 134

3 4,332,624
6 4,332,625
11 4,332,626
57 R 4,332,264

CLASS 135

3 A 4,332,265
5 R 4,332,266

CLASS 136

246 4,332,973
249 4,332,974

CLASS 137

1 4,332,267
81.1 4,332,268
84 4,332,269
101 4,332,270
315 4,332,271
318 4,332,272
322 4,332,273
496 4,332,274
504 4,332,275
526 4,332,276

CLASS 138

89 4,332,277
127 4,332,278

CLASS 139

82 4,332,279
435 4,332,280

CLASS 141

1 4,332,281
4,332,282

CLASS 148

1.5 4,332,627
6.2 4,332,628
11.5 R 4,332,629
12 B 4,332,630

CLASS 149

19.2 4,332,631
4,332,632

CLASS 150

1.5 R 4,332,283
35 4,332,284

CLASS 152

209 R 4,332,286

CLASS 156

62.2 4,332,633
145 4,332,634
256 4,332,635
289 4,332,636
308.2 Re.30,955
328 4,332,713
353 4,332,637
515 Re.30,956

CLASS 160

133 4,332,287
176 R 4,332,288

CLASS 162

4 4,332,638

CLASS 164

446 4,332,289

CLASS 165

10 4,332,290
76 4,332,291
95 4,332,292
153 4,332,293
157 4,332,294
178 4,332,295

CLASS 166

171 4,332,296
270 4,332,297
319 4,332,298

CLASS 172

98 4,332,299

CLASS 173

104 4,332,300

CLASS 174

76 4,332,975
107 4,332,976

CLASS 175

50 4,332,301
410 Re.30,952

CLASS 178

22.14 4,332,977
22.17 Re.30,957

CLASS 179

1 GQ 4,332,979
1 GS 4,332,978
2 A 4,332,980
2 EA 4,332,981
7.1 R 4,332,982
17 B 4,332,983
81 R 4,332,984
90 BD 4,332,985
146 E 4,332,986

CLASS 180

54 R 4,332,302
132 4,332,303
233 4,332,304
271 4,332,305
287 4,332,306

CLASS 181

256 4,332,307

CLASS 182

120 4,332,308

CLASS 184

7 D 4,332,309

CLASS 188

218 A 4,332,310
340 4,332,311

CLASS 192

4 C 4,332,312
5 4,332,313
89 B 4,332,314

CLASS 194

1 G 4,332,315

CLASS 198

425 4,332,316
734 4,332,317

CLASS 200

16 D 4,332,987
19 DC 4,332,988
47 4,332,989
67 G 4,332,991
314 4,332,990

CLASS 201

17 4,332,641

CLASS 202

173 4,332,642

CLASS 203

18 4,332,643
46 4,332,644
75 4,332,645

CLASS 204

1 T 4,332,646
49 4,332,647
95 4,332,648
98 4,332,649
104 4,332,650
129.75 4,332,652
129.9 4,332,651
140 4,332,653
155 4,332,700
158 R 4,332,654
159.14 4,332,656
159.2 4,332,655
159.22 4,332,657
195 M 4,332,658
237 4,332,659
245 4,332,660
253 4,332,661
265 4,332,662
266 4,332,664
277 4,332,663
296 4,332,665

CLASS 206

5.1 4,332,318
45.14 4,332,320
210 4,332,319
216 4,332,325
228 4,332,321
364 4,332,322
365 4,332,323
389 4,332,324
497 4,332,326
604 4,332,327

CLASS 208

8 LE 4,332,666
4,332,667
4,332,668
11 R 4,332,669
68 4,332,670
92 4,332,671
120 4,332,672
4,332,673
4,332,674
254 R 4,332,675
4,332,676

CLASS 209

3 4,332,677

CLASS 210

86 4,332,678
90 4,332,679
143 4,332,680
170 4,332,681
242.1 4,332,682
499 4,332,683
634 4,332,684
638 4,332,685
651 4,332,686
721 4,332,687

CLASS 212

180 4,332,328

CLASS 219

9.5 4,332,997
10.55 R 4,332,992
4,332,993
64 4,332,994
69 V 4,332,995
69 W 4,333,000
76.14 4,332,996
107 4,332,998
121 LJ 4,332,999
125.1 4,333,001
321 4,333,002
377 4,333,003
497 4,333,004

CLASS 220

2.1 A 4,332,329
3.5 4,332,330
85 P 4,332,331
276 4,332,332

CLASS 222

83 4,332,333
83.5 4,332,334
145 4,332,335
269 4,332,336

CLASS 224

42.03 B 4,332,337
222 4,332,338

CLASS 226

195 4,332,339

CLASS 227

10 4,332,340

CLASS 228

180 A 4,332,341
4,332,342
231 4,332,343

CLASS 229

37 R 4,332,345
62 4,332,344
4,332,347
73 4,332,346

CLASS 232

43.3 4,332,348

CLASS 233

1 R 4,332,349
7 4,332,350
38 4,332,351

CLASS 235

435 4,333,005
457 4,333,006

CLASS 236

1 E 4,332,352
49 Re.30,953

CLASS 241

14 4,332,353
16 4,332,354

CLASS 242

56 R 4,332,355
72 B 4,332,356
78.1 4,332,357
84.2 A 4,332,358
203 4,332,359

CLASS 244

3.27 4,332,360

CLASS 248

95 4,332,361
226.5 4,332,362
321 4,332,363
442.2 4,332,364
544 4,332,365
670 4,332,366

CLASS 250

201 4,333,007
225 4,333,008
237 G 4,333,009
252 4,333,010
409 4,333,011
4,333,012
461 R 4,333,013
521 4,333,014
551 4,333,015
577 4,333,016

CLASS 251

1 A 4,332,367
30 4,332,368
114 4,332,369
214 4,332,370
240 4,332,285

CLASS 252

8.55 C 4,332,688
49.3 4,332,689
70 4,332,690
96 4,332,691
135 4,332,692
181 4,332,693
189 4,332,694
312 4,332,695
321 4,332,696
429 B 4,332,697
430 4,332,698
455 Z 4,332,699

CLASS 254

203 4,332,371
391 4,332,372

CLASS 260

112 R 4,332,717
112.5 R 4,332,718
123.5 4,332,719
239.3 R 4,332,720
239.57 4,332,721
245.4 4,332,722
326 S 4,332,724
403 4,332,736
404.5 4,332,737
410.6 4,332,738
453 PC 4,332,739
453 RZ 4,332,740
453 SP 4,332,741
4,332,742
463 4,332,744
464 4,332,745
932 4,332,746
986 4,332,747

CLASS 264

11 4,332,748
13 4,332,749
23 4,332,750
28 4,332,751
41 4,332,752
44 4,332,753
45.5 4,332,754
65 4,332,755
70 4,332,756
103 4,332,757
4,332,758
108 4,332,759
143 4,332,760
147 4,332,761
168 4,332,762
176 F 4,332,764
176 R 4,332,763
206 4,332,765
249 4,332,766
322 4,332,767

CLASS 266

99 4,332,374
228 4,332,373

CLASS 271

9 4,332,375
217 4,332,376
293 4,332,377

CLASS 272

70.3 4,332,378
119 4,332,379
137 4,332,380
144 4,332,381

CLASS 273

54 B 4,332,382
64 4,332,383
73 F 4,332,384
113 4,332,385
148 A 4,332,386
156 4,332,387
172 4,332,388
237 4,332,389
389 4,332,390

CLASS 277

11 4,332,391
27 4,332,392
112 4,332,393

CLASS 280

11.27 4,332,394
213 4,332,395
474 4,332,396
693 4,332,397
732 4,332,398
819 4,332,399

CLASS 282

3 A 4,332,400

CLASS 285

47 4,332,401
86 4,332,402
189 4,332,403
223 4,332,404

CLASS 289

16.5 4,332,405

CLASS 290

2 4,333,017
55 4,333,018

CLASS 292

18 4,332,406
161 4,332,407

CLASS 294

1 CA 4,332,408
2 4,332,409
86.18 4,332,410
104 4,332,411

CLASS 296

29 4,332,412
84 R 4,332,413
97 D 4,332,414
213 4,332,415
216 4,332,416

CLASS 297

118 Re.30,954
329 4,332,417
362 4,332,418
443 4,332,419

CLASS 299

31 4,332,420
34 4,332,421
39 4,332,422

CLASS 303

22 R 4,332,423

CLASS 305

35 EB 4,332,424
54 4,332,425

CLASS 307

87 4,333,021
252 N 4,333,019
279 4,333,020
304 4,333,022
310 4,333,023
351 4,333,024
355 4,333,025

CLASS 308

2 R 4,332,426
9 4,332,427
10 4,332,428

CLASS 310

42 4,333,026
61 4,333,027
326 4,333,028
329 4,333,029

CLASS 312

236 4,332,429

CLASS 313

94 4,333,030
95 4,333,031
181 4,333,032
407 4,333,033
4,333,034
411 4,333,035
420 4,333,036

CLASS 315

3 4,333,037
3.5 4,333,038
169.2 4,333,040
169.4 4,333,039

CLASS 318

317 4,333,041
591 4,333,043
636 4,333,044
696 4,333,045
811 4,333,042

CLASS 323

231 4,333,046
311 4,333,047
319 4,333,048

CLASS 324

102 4,333,049
107 4,333,050
158 R 4,333,051
208 4,333,052
307 4,333,053
380 4,333,054

CLASS 328

133 4,333,055

CLASS 330

129 4,333,056
253 4,333,057
4,333,058
265 4,333,059

CLASS 331

1 A 4,333,060
99 4,333,062

CLASS 333

18 4,333,063
173 4,333,064
194 4,333,065

CLASS 335

206 4,333,066

CLASS 338

34 4,333,067
158 4,333,068
315 4,333,069

CLASS 339

17 C 4,332,430
74 R 4,332,431
75 M 4,332,432
99 R 4,332,433
258 R 4,332,434

CLASS 340

52 R 4,333,070
56 4,333,071
347 AD 4,333,075
365 S 4,333,089
4,333,091
365 VL 4,333,090
378.2 4,333,092
566 4,333,093
4,333,094
679 4,333,095
684 4,333,096
711 4,333,097
805 4,333,098
825.3 4,333,074
825.36 4,333,073
825.54 4,333,072

CLASS 343

5 DD 4,333,076
6 R 4,333,077
6.5 LC 4,333,078
7 PF 4,333,079
17.2 PC 4,333,080
108 M 4,333,081
754 4,333,082

CLASS 346

1.1 4,333,083
17 4,333,084
76 PH 4,333,085
140 R 4,333,086
4,333,087
4,333,088

CLASS 350

96.20 4,332,435
96.23 4,332,436
103 4,332,437
167 4,332,438
320 4,332,439
357 4,332,440
358 4,332,441
469 4,332,442

CLASS 351

160 H 4,332,443

CLASS 354

79 4,332,444
106 4,332,445
155 4,332,446
209 4,332,447
213 4,332,448
214 4,332,449
234 4,332,450
4,332,451
4,332,452
288 4,332,453
298 4,332,456
317 4,332,454
324 4,332,455

CLASS 355

3 BE 4,332,458
4,332,459
3 FU 4,332,457
8 4,332,460
14 C 4,332,464
14 D 4,332,467
14 R 4,332,461
4,332,462
4,332,463
4,332,465
27 4,332,466

CLASS 356

5 4,332,468
222 4,332,469
246 4,332,471
325 4,332,470
344 4,332,472
356 4,332,473
366 4,332,474
369 4,332,476
371 4,332,477
386 4,332,475

CLASS 357

67 4,333,099
71 4,333,100
79 4,333,101
81 4,333,102

CLASS 358

19 4,333,103
23 4,333,104
67 4,333,105
107 4,333,106
120 4,333,107
145 4,333,108
147 4,333,109
165 4,333,110
213 4,333,111
298 4,333,112

CLASS 360

27 4,333,113
66 4,333,114
74.2 4,333,115
78 4,333,116
4,333,117

CLASS 361

30 4,333,118
76 4,333,119
79 4,333,120
104 4,333,121
114 4,333,122
213 4,333,123
214 4,333,124
257 4,333,125
4,333,126

CLASS 362

17 4,333,127
135 4,333,128
205 4,333,129
293 4,333,130
372 4,333,131
421 4,333,132

CLASS 363

15 4,333,133
17 4,333,134
27 4,333,140
28 4,333,135
43 4,333,136
54 4,333,137
89 4,333,138
97 4,333,139
127 4,333,141

CLASS 364

200 4,333,142
4,333,143
4,333,144
414 4,333,145
426 4,333,146
436 4,333,147
469 4,333,148
481 4,333,149
484 4,333,150
492 4,333,151
521 4,333,152
523 4,333,153
559 4,333,154
708 4,333,155
724 4,333,156
802 4,333,157
825 4,333,158
900 4,333,159
4,333,160
4,333,161

CLASS 365

15 4,333,162
43 4,333,163
104 4,333,164
120 4,333,165
182 4,333,166
210 4,333,168
222 4,333,167

CLASS 366

4 4,332,478
77 4,332,479
4,332,480
84 4,332,481
130 4,332,482
132 4,332,483
137 4,332,484
142 4,332,485
146 4,332,486

CLASS 367

1 4,333,169
125 4,333,170

CLASS 368

87 4,333,171

CLASS 369

2 4,333,172
45 4,333,173
256 4,333,174

CLASS 370

56 4,333,175
84 4,333,176

CLASS 371

15 4,333,177

CLASS 372

46 4,333,061

CLASS 374

130 4,332,168

CLASS 376

253 4,332,639
264 4,332,640

CLASS 400

126 4,332,487
161.5 4,332,488
172 4,332,489
175 4,332,490
208 4,332,491
320 4,332,492
484 4,332,493

CLASS 401

5 4,332,494
52 4,332,496

154 4,332,497
188 R 4,332,498

CLASS 403

6 4,332,495
53 4,332,499
114 4,332,500
219 4,332,501
343 4,332,502

CLASS 404

11 4,332,503
68 4,332,504
108 4,332,505

CLASS 405

77 4,332,506
92 4,332,507
144 4,332,508
168 4,332,509
171 4,332,510
178 4,332,511
290 4,332,512

CLASS 407

101 4,332,513

CLASS 408

103 4,332,514

CLASS 410

149 4,332,515

CLASS 414

288 4,332,516
699 4,332,517

CLASS 415

2 R 4,332,518
52 4,332,519
63 4,332,520
90 4,332,522
126 4,332,523
176 4,332,524
189 4,332,521

CLASS 416

134 A 4,332,525
166 4,332,526

CLASS 417

15 4,332,527
45 4,332,528
54 4,332,529
130 4,332,530
218 4,332,531
273 4,332,532
513 4,332,533

CLASS 418

45 4,332,534
55 4,332,535

CLASS 422

63 4,332,768
75 4,332,769
78 4,332,770
84 4,332,771
97 4,332,772
109 4,332,773
111 4,332,774
112 4,332,775

CLASS 423

10 4,332,776
98 4,332,777
132 4,332,778
139 B1 4,246,240
321 R 4,332,779
413 4,332,780
573 G 4,332,781
628 4,332,782

CLASS 424

1 4,332,783
4,332,784
4,332,785
4,332,786
4,332,787
12 4,332,788
27 4,332,789
38 4,332,790
52 4,332,791
84 4,332,792
89 4,332,793
180 4,332,794
199 4,332,795
229 4,332,796
238 4,332,797
246 4,332,798
4,332,799
4,332,800
4,332,801
248.57 4,332,804
251 4,332,802
258 4,332,805
263 4,332,808
266 4,332,809
267 4,332,803
4,332,810
4,332,811
269 4,332,812
273 R 4,332,806
4,332,813
4,332,814
274 4,332,807
4,332,815
4,332,816
285 4,332,817
4,332,818
301 4,332,819
304 4,332,820
322 4,332,821
324 4,332,822

CLASS 425

33 4,332,536
121 4,332,537
140 4,332,538
151 4,332,539
182 4,332,540
197 4,332,541
459 4,332,542
461 4,332,543
529 4,332,544
577 4,332,545

CLASS 426

272 4,332,823
330.3 4,332,824
330.5 4,332,825
407 4,332,826
481 4,332,827
523 4,332,828
535 4,332,829
548 4,332,830
582 4,332,831
641 4,332,832

CLASS 427

8 4,332,833
32 4,332,835
44 4,332,836
48 4,332,834
57 4,332,837
74 4,332,838
85 4,332,839
130 4,332,840
135 4,332,841
176 4,332,842
237 4,332,843
387 4,332,844

CLASS 428

35 4,332,845
131 4,332,846
156 4,332,847
174 4,332,848
188 4,332,849
288 4,332,850
325 4,332,851
331 4,332,852
371 4,332,853
377 4,332,854
379 4,332,855
408 4,332,856
412 4,332,857
4,332,858
4,332,859
473 4,332,860
520 4,332,861
593 4,332,862
695 4,332,863

CLASS 429

3 4,332,864
48 4,332,865
50 4,332,866
94 4,332,867
178 4,332,868
194 4,332,869
206 4,332,870
217 4,332,871

CLASS 430

8 4,332,872
15 4,332,873
28 4,332,874
45 4,332,875
68 4,332,876
103 4,332,877
264 4,332,878
272 4,332,879
4,332,880
311 4,332,881
322 4,332,882
4,332,883
338 4,332,884
506 4,332,885
551 4,332,886
567 4,332,887
570 4,332,888
583 4,332,889

CLASS 431

5 4,332,546
242 4,332,547
289 4,332,548
344 4,332,549
4,332,550

CLASS 432

19 4,332,551
205 4,332,553
209 4,332,552
233 4,332,554

CLASS 433

28 4,332,555
69 4,332,556
77 4,332,557
86 4,332,558
92 4,332,560
102 4,332,561
126 4,332,562
215 4,332,563
218 4,332,564

CLASS 434

118 4,332,565
178 4,332,566
195 4,332,567
224 4,332,568
272 4,332,569
274 4,332,570

CLASS 435

7 4,332,890
48 4,332,891
68 4,332,892
4,332,893
99 4,332,894
105 4,332,895
119 4,332,896
172 4,332,897
4,332,898
4,332,899
4,332,900
235 4,332,901
253 4,332,902
254 4,332,903
262 4,332,904
280 4,332,905
291 4,332,906

CLASS 440

9 4,332,571

CLASS 441

1 4,332,048
80 4,332,049

CLASS 455

601 4,333,178

CLASS 464

102 4,332,148
109 4,332,147

CLASS 474

38 4,332,572
94 4,332,573
161 4,332,574
201 4,332,575
205 4,332,576

CLASS 493

74 4,332,577
197 4,332,578
325 4,332,579
346 4,332,580
413 4,332,581
424 4,332,582
430 4,332,583

CLASS 501

39 4,332,907
4,332,908
97 4,332,909
106 4,332,910
140 4,332,911
4,332,912
144 4,332,913

CLASS 518

700 4,332,914
4,332,915

CLASS 521

25 4,332,916
134 4,332,917
137 4,332,716

CLASS 523

203 4,332,704
206 4,332,705
220 4,332,620
402 4,332,711
416 4,332,709
450 4,332,706

CLASS 524

68 4,332,703
141 4,332,714
178 4,332,702
265 4,332,715
376 4,332,708
476 4,332,707
504 4,332,919
539 4,332,701
591 4,332,710
650 4,332,712
4,332,926

CLASS 525

259 4,332,918
408 4,332,920
462 4,332,921
478 4,332,922
507 4,332,923

CLASS 526

64 4,332,924

CLASS 528

48 4,332,925
58 4,332,927
113 4,332,928
185 4,332,929
233 4,332,930
297 4,332,931
481 4,332,932
500 4,332,933

CLASS 536

6.4 4,332,934
50 4,332,935
120 4,332,936

CLASS 542

417 4,332,948

CLASS 544

105 4,332,937
189 4,332,938
217 4,332,939

CLASS 546

181 4,332,940
191 4,332,941
208 4,332,946
240 4,332,942
253 4,332,943
272 4,332,944
281 4,332,945
284 4,332,947

CLASS 548

128 4,332,949
146 4,332,950
218 4,332,951
226 4,332,952
307 4,332,953
444 4,332,723
501 4,332,727
519 4,332,728
533 4,332,725
4,332,726

CLASS 549

10 4,332,954
56 4,332,955
229 4,332,729
240 4,332,733
253 4,332,734
302 4,332,730
332 4,332,732
334 4,332,731
496 4,332,735

CLASS 556

442 4,332,956
446 4,332,957

CLASS 560

35 4,332,958
60 4,332,959
62 4,332,960
4,332,961
124 4,332,962
131 4,332,963
141 4,332,964
169 4,332,965
206 4,332,966

CLASS 562

512.2 4,332,743

CLASS 564

162 4,332,967
278 4,332,968
460 4,332,969

CLASS 568

319 4,332,970
480 4,332,971

CLASS 585

442 4,332,972

CLASSIFICATION OF DESIGNS

D1— 99 264,640
D3— 30.1 264,641
D6— 3 264,642
31 264,643
32 264,644
37 264,645
264,646
49 264,647
67 264,648
71 264,649
85 264,650
264,651
105 264,652
114 264,653
143 264,654
164 264,655
168 264,656
177 264,657
186 264,658
264,659
191 264,660
193 264,661
257 264,662
D7— 5 264,663
264,664
264,665
264,666
264,667
21 264,668
35 264,669
264,670
D10— 75 264,691
D11— 89 264,692
73 264,672
124 264,673
D8— 13 264,674
20 264,675
47 264,676
57 264,677
61 264,678
62 264,679
343 264,680
354 264,682
264,683
D9— 339 264,681
346 264,684
390 264,685
429 264,686
433 264,687
264,688
434 264,689
454 264,690
264,706
300 264,707
302 264,698
D13— 4 264,708
264,709
11 264,710
24 264,711
D14— 1 264,712
264,713
53 264,714
60 264,715
68 264,716
264,717
70 264,718
D15— 9 264,719
97 264,720
126 264,721
138 264,722
145 264,723
149 264,724
D16— 31 264,725
264,726
264,727
45 264,728
D18— 2 264,729
26 264,730
D20— 40 264,731
D21— 13 264,732
42 264,733
264,734
59 264,735
196 264,736
198 264,737
264,738
264,739
201 264,740
204 264,741
217 264,742
264,743
264,744
264,745
226 264,746
240 264,747
D22— 13 264,748
D23— 61 264,749
95 264,750
140 264,751
D24— 1.1 264,752
34 264,753
36 264,754
49 264,755
D25— 73 264,756
D28— 7 264,757
64 264,758
D34— 17 264,759
24 264,696
35 264,697
39 264,760
42 264,761
D47— 6 E 264,762
D99— 28 264,763
264,764

CLASSIFICATION OF PLANTS

P.— 11 4,853
22 4,854

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[Notice of Dec. 16, 1969, 869 O.G. 6877]

71— 36 T101,901
424— 81 T101,902
525— 17 T101,903

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 4,332,090
4,332,757
4,332,758
02 : 4,332,057
04 : 4,332,102
4,332,238
4,332,250
4,332,259
4,332,581
4,332,624
06 : Re.30,953
4,332,038
4,332,040
4,332,044
4,332,070
4,332,079
4,332,113
4,332,145
4,332,147
4,332,153
4,332,158
4,332,159
4,332,164
4,332,166
4,332,183
4,332,197
4,332,199
4,332,229
4,332,232
4,332,239
4,332,240
4,332,254
4,332,264
4,332,265
4,332,272
4,332,282
4,332,283
4,332,296
4,332,297
4,332,298
4,332,304
4,332,315
4,332,330
4,332,331
4,332,333
4,332,337
4,332,338
4,332,348
4,332,350
4,332,378
4,332,385
4,332,388
4,332,392
4,332,393
4,332,404
4,332,426
4,332,441
4,332,450
4,332,464
4,332,469
4,332,501
4,332,503
4,332,506
4,332,514
4,332,515
4,332,520
4,332,521
4,332,529
4,332,537
4,332,557
4,332,572
4,332,625
4,332,639
4,332,640
4,332,655
4,332,656
4,332,669
4,332,672
4,332,680
4,332,712
4,332,782
4,332,792
4,332,804
4,332,821
4,332,826
4,332,830
4,332,853
4,332,855
4,332,868
4,332,879
4,332,911
4,332,912
4,332,926
4,332,944
4,332,958
4,332,974
4,332,979
4,332,983
4,332,990
4,332,991
4,332,996
4,333,009
4,333,014
4,333,017
4,333,018
4,333,030
4,333,036
4,333,047
4,333,053
4,333,055
4,333,071
4,333,079
4,333,083
4,333,090
4,333,094
4,333,108
4,333,119
4,333,123
4,333,142
4,333,157
4,333,162
4,333,163
4,333,165
4,333,169
4,333,170
4,333,176
4,333,177
08 : 4,332,178
4,332,246
4,332,461
4,332,465
4,332,576
4,332,674
4,332,723
4,332,785
4,333,007
4,333,115
09 : 4,332,133
4,332,144
4,332,193
4,332,207
4,332,213
4,332,340
4,332,373
4,332,377
4,332,475
4,332,518
4,332,525
4,332,606
4,332,747
4,332,835
4,332,847
4,332,871
4,332,942
4,332,952
4,333,004
4,333,088
4,333,133
4,333,153
10 : 4,332,611
4,332,737
4,332,778
12 : Re.30,950
Re.30,954
4,332,219
4,332,313
4,332,415
4,332,683
4,332,776
4,332,779
4,332,980
4,333,060
4,333,100
4,333,110
13 : 4,332,034
4,332,097
4,332,123
4,332,185
4,332,203
4,332,204
4,332,379
4,332,391
4,332,538
4,332,549
4,332,622
15 : 4,332,051
16 : 4,332,235
4,332,395
17 : 4,332,033
4,332,069
4,332,087
4,332,122
4,332,126
4,332,127
4,332,177
4,332,247
4,332,252
4,332,257
4,332,275
4,332,290
4,332,305
4,332,321
4,332,334
4,332,362
4,332,432
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264,743
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06 : 264,641
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38 : 264,735
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264,709
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264,752
45 : 264,698
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